PROPOSED POLICY LANGUAGE FOR CPAM 2009-0002:
Chesapeake Bay Preservation Act Policies

Changes to Chapters 2, 5, 6, 7, 8, 9, 11 & Glossary
of the 2001 Revised General Plan, as Amended

Policies revised through:
March 24, 2010

Key:
Blue text (double-underlined): proposed additions
Red text (strike-through): proposed deletions

Chapter 2
Planning Approach

General Water and Wastewater Policies

1. The County will work with the Loudoun County Sanitation Authority (LCSA) and officials of Towns to ensure timely provision of central sewer and water in accord with the land use policies of this Plan.

2. The County will evaluate further development proposals based upon the County's ability to treat, transmit, and distribute a safe and adequate potable water supply in accordance with the land use policies of this Plan.

3. Water and wastewater treatment and conveyance facilities will be planned, designed, and maintained to be compatible with County development and environmental goals while functioning at a high level of efficiency.

4. In planning for future central wastewater and water treatment facilities, the County will use water and sewer design capacity standards established by the LCSA. Where a standard has not been established by the LCSA, the County will use those established by the Virginia Department of Health and the Virginia Department of Environmental Quality and comply with the Clean Water Act and other federal standards. However, within the powers delegated to it by the state, where state standards are considered too lenient or otherwise inappropriate in relation to the County's goals and policies, the County may apply more stringent standards.

5. The County will continue to identify, survey and quantify areas in need of improvements to sewage disposal and water supply systems and will work with communities to identify and implement appropriate solutions such as installing systems, upgrade or replace failing systems, and, where appropriate, design, build and install communal systems.

6. The County, in cooperation with LCSA, will develop long-range plans for wastewater treatment and water supply that establish criteria for siting future wastewater treatment facilities and impoundment sites. The County will pursue this effort according to the sewer and water policies of this plan.

7. LCSA will continue to be responsible for the provision and extensions of public water and sewer service in the Suburban Policy Area and Transition Policy Area. The LCSA may enter into short- or long-term wastewater service agreements with neighboring jurisdictions if mutually agreed to by the County and LCSA.

8. The County will encourage existing residences and communities served by on-site facilities to hook into public water or sewer facilities when such facilities become available within 300 feet of a residence.

9. The County will require existing communities or residences to hook to a nearby public water or sewer system if on-site water supply or waste treatment capability has deteriorated to a point where there is a public heath risk. The County, in conjunction with the LCSA, will seek ways to assist in extending sewer lines into existing communities or residences once development in surrounding areas has brought trunk sewers to the edges of these communities. The County will provide no-interest loans and other incentives to those existing communities or residences required to hook to a nearby public water or sewer system as a result of on-site water supply or waste treatment capability that has deteriorated to a point where there is a public health risk.

10. Communal water and wastewater systems must be financed by the developer or by those who will be directly served by the system. A financing plan will be required. The financing plan must be designed, organized, and operated to be financially self-sustaining to pay all costs incurred by the LCSA for operation and maintenance and to provide appropriate reserves. The County may provide financial assistance (such as loans or grants) to assist in the construction of such a facility for existing rural communities if the system is needed to solve a significant public health threat.

11. Communal water and wastewater treatment system lines that cross land outside a water or sewer service area must be protected by the establishment of permanent easements along the line prohibiting any connection outside the service area.

12. New central wastewater and water lines and facilities should be constructed in a manner that causes the least environmental risk and visual disruption. To the degree possible, wastewater lines, water lines, and other facilities will be located outside of the Resource Protection Area in accordance with the County-adopted provisions of the Chesapeake Bay Preservation Act and no more land disturbed than necessary for installation and maintenance. Disturbed areas (excluding permanent access easements to reach a facility) should be stabilized with indigenous ~~native~~ vegetation. New treatment facilities should be screened with indigenous trees, indigenous shrubs ~~berms~~, and/or berms ~~shrubs~~.

General Water Policies

1. The County will support long-term water conservation.

2. The County will continue to rely on Fairfax City's Goose Creek Impoundment and the Fairfax County Potomac River intake as the major central water supply sources. For the Suburban Policy Area and Transition Policy Area, other water-supply options including the existing Potomac River water plants operated by the Town of Leesburg and the Fairfax County Water Authority and the construction of its own water facility on the Potomac may be considered. Potential new sites in the Rural Policy Area would be considered for future storage purposes with water being released through existing streams to replenish impoundment sites downstream and to maintain environmental flows during low water months. Water quality in these areas will be maintained by the use of best management practices, ~~and by~~ controlling non-point source pollution, and adherence to the County-adopted provisions of the Chesapeake Bay Preservation Act.

3. A Commission Permit and other appropriate approvals are required prior to the construction of any communal water system with more than 15 connections and for all rural economy uses and residential clusters using communal systems. The County, prior to approval of the Commission Permit and other required applications, will establish a service area for the communal water system.

4. The County will improve the likelihood of sustainability of groundwater by limiting the installation of additional wells and limiting the number of additional households dependent on wells through water conservation efforts and through the use of communal and/or central water systems where feasible and as approved by LCSA.

5. All communal water systems with more than 15 connections will be owned and operated by the LCSA and will be designed and installed in accordance with applicable State Health Department, LCSA, Virginia Department of Environmental Quality and County standards and regulations.

6. The County will discourage the continued use of individual wells as a source of drinking water in the Suburban Policy Area and Transition Policy Area and will encourage existing landowners to hook into

central water facilities as water lines are extended into nearby areas.

7. The Landfill Water Service Area District is established for the area in proximity to the Loudoun County Solid Waste Management Facility and for properties through which the water transmission line passes. (Refer to LCSA Water and Sewer Lines Map, pg. 2-17.) The extension of the central (municipal) water service in this district is permitted to avoid potential potable water problems for properties near the Loudoun County Solid Waste Management Facility. All new development within the Landfill Water Service Area District will be required to obtain service from the central water system. The water lines for the Landfill Water Service Area/District will be sized such that they will only accommodate the maximum density permitted by the Plan (densities up to one dwelling unit per 3 acres).

8. The use of LCSA-approved communal water systems to serve the Rural Policy Area is promoted:

   a. To serve rural economy uses or rural and residential clusters as defined in this Plan.

   b. To solve the potable water problems and public health problems of existing residences.

   c. To serve new or existing institutional uses, including schools, permitted by right or by special exception in the County's rural zoning districts.

9. The extension of central (municipal) water service into the Rural Policy Area is not permitted except to serve County and Town owned and operated public facilities immediately adjacent to a Town or its JLMA. Existing Rural Villages, subject to approval of the majority of village citizens and the LCSA may extend water service to public facilities.

General Wastewater Policies

1. The County will continue to rely on and encourage efficient, economical and effective use of the Potomac Interceptor Sewer, the Broad Run Interceptor, the Russell Branch Interceptor, the Beaverdam Interceptor and the Blue Plains Wastewater Treatment Plant and Broad Run Advanced Wastewater Treatment Plant Facilities to serve the Suburban Policy Area and the Transition Policy Area.

2. A Commission Permit and other necessary approvals will be required prior to the construction of any communal wastewater treatment system. Prior to approval of the Commission Permit and other required applications, the County will establish a service area for the communal wastewater treatment system.

3. The County and LCSA will review and evaluate technological alternatives for individual and communal wastewater systems and identify throughout the County areas in which these alternatives are acceptable.

4. The use of alternative wastewater systems, not specifically addressed in the Commonwealth of Virginia Sewage Handling and Disposal Regulations, may be permitted in the Rural Policy Area and the Transition Policy Area. Such systems will be intended to serve existing residences and communities with failing septic systems and agriculturally compatible institutional and industrial uses. The proposed alternative must be reviewed and approved by the Health Department on a case-by-case basis and must provide a high degree of reliability to ensure a high level of environmental protection. The County should require liens or bonds or other methods for protecting the public from incurring any costs of correcting a failed private system.

5. The use of LCSA approved communal wastewater collection and treatment systems followed by surface or subsurface soil dispersion is promoted:

   a. To serve the Existing Rural Villages defined in this plan.

   b. To serve existing or new rural economy uses or rural and residential clusters as defined in this plan.

c. To solve wastewater or public health problems of existing residences; and

d. To serve new or existing institutional uses, including schools, permitted by right or by special exception in the County's Rural Policy Area.

6. Communal wastewater treatment facilities serving institutional uses will be sized to serve only the institutional use.

7. The County, in cooperation with the LCSA and the Health Department, will identify viable alternative wastewater treatment methods to septic and drainfield-based systems, including small communal treatment plants and on-site treatment to support clustered residential development. The County will develop and implement standards including those that protect receiving stream quality for the use of such alternatives.

8. Communal wastewater treatment systems using land application (surface or sub-surface) will be preferred to communal wastewater treatment systems which discharge into streams. Wastewater land application systems will be based on soils, geology, topography, environmental impact and proven technology in the field of wastewater treatment and the location and design of these systems will be tailored to the tracts on which they are proposed.

9. The County anticipates that communal wastewater treatment plants may be designed for direct stream discharge and/or land application using the following criteria:

   a. Communal wastewater discharge systems must be designed to maintain or exceed existing stream water quality and shall be located at least five miles upstream from a public water intake or designated public water supply area. The discharge should be designed to comply with the "Clean Water Act" standards if discharged above a public water intake.

   b. Communal wastewater treatment plants may not discharge into natural trout streams.

10. The County will encourage LCSA to seek biological nutrient reduction systems for all treatment facilities.

11. The County will allow permanent pump-and-haul operations only to serve existing non-residential uses in the Suburban Policy Area if there is a demonstrated health risk associated with the existing on-site treatment facility and the use is a permitted use as identified by the Zoning Ordinance. Permanent pump-and-haul operations will not be permitted to serve new development or serve as a means of expanding an existing use. The Health Department and the LCSA must approve pump-and-haul operations.

12. Pump-and-haul operations are not permitted in the Rural Policy Area or Existing Rural Villages except as a last resort and temporary wastewater disposal method to address a proven, public health emergency. The County will determine the length of the period during which pump-and-haul disposal will be allowed.

13. The use of combined systems and other alternative sewage disposal systems, under the supervision of a qualified operator, are permitted in the Rural Policy Area and the Transition Policy Area when they are used as a component of a communal wastewater treatment facility that promotes clustered development less than the threshold of typical communal systems. The County will assist in establishing an entity to provide oversight and maintenance services for the operation of new technology, alternative individual and communal wastewater treatment systems.

14. The County (through a partnership among such agencies as LCSA, the Health Department and Housing Services) will pursue funding sources to rehabilitate homes that currently lack adequate indoor plumbing.

15. The extension of central sewer (wastewater) service into the Rural Policy Area is not permitted except to serve County and Town owned and operated public facilities immediately adjacent to a Town or its JLMA. Existing Villages subject to approval of the majority of village residents and the LCSA may extend

communal wastewater service to public facilities.

16. The County will require routine maintenance of individual wastewater disposal systems to prevent groundwater and surface water contamination.

Solid Waste Management Policies

1. The County Solid Waste Management Plan will identify the type and level of service to be provided in the community.

2. The County will continue to implement an integrated solid waste management strategy that places priority on reduction, reuse, and recycling of solid waste above resource recovery, incineration, and disposal into landfills.

3. The County landfill will continue to exist to ensure that the County always has an acceptable alternative for local disposal of waste should other waste disposal alternatives fail or become ineffective.

4. The County will continue to seek private sector support for the provision of current and future Solid Waste Management Services. To this end, the County will define facilities and location and siting criteria for private facilities consistently in Section 1080 of the Codified Ordinance and the Zoning Ordinance.

5. The County encourages the co-location of government facilities, including recycling centers, where feasible and where they can function effectively.

6. The County will develop a hazardous waste education program and increase residential access to the safe disposal of hazardous waste to protect groundwater and surface water resources.

Energy and Communication Policies

1. The County will require the grouping and burying of utility lines and facilities to the extent permitted by law.

2. Areas disturbed by public utility expansions should be replanted and/or reforested with indigenous vegetation and screened from adjacent uses.

3. High-tension power lines, communications towers, and similar facilities should be sufficiently separated from adjacent residential uses to minimize any scientifically recognized potential health and safety risk.

4. Electric generation facilities that use clean burning and environmentally sound and proven fuel sources for power generation can be located only where their impact on the surrounding land uses and the environment is compatible.

5. The County should proactively study and develop policies and implementation schemes that accommodate the changing technological requirements of capital-intensive technology industries, while balancing any potential harmful environmental effects on the community.

6. The County will develop and implement a comprehensive utilities plan to address the impacts and location requirements of energy and communications facilities.

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Chapter 5
The Green Infrastructure: Environmental, Natural, and Heritage Resources

Abundant natural resources and a rich cultural heritage have defined Loudoun County's unique sense of place for more than 240 years. The mountainsides, forests, streams, vast stretches of agricultural land, and numerous historical sites are tangible assets that make the County an appealing place to live and work, while contributing directly and indirectly to Loudoun's economy.

The Green Infrastructure organizes the County's environmental, natural and heritage resources into a related system consisting of the Potomac River edge, stream corridors and scenic rivers, forested areas and tree stands, mountainsides, wetlands, limestone conglomerate areas, important plant and wildlife habitats, greenways and trails, scenic areas and corridors, historic and archaeological sites, and other open spaces (natural, eased and man-made) of special importance. (Refer to Green Infrastructure Map. Pg. 5-3)

In all future land use planning, the framework of the Green Infrastructure will guide where and how development and redevelopment occurs. Conservation design requires the conservation of Green Infrastructure elements on a site while providing for development at full density on the area that remains. It will be incorporated into regulations with performance standards that will support the Green Infrastructure, highlight its environmental and economic value, and provide flexibility.

The County will apply a Green Infrastructure strategy to guide the implementation of environmental policies. This strategy is based on three goals:

- Conservation – Creating a stronger relationship between natural and built environments.
- Preservation – Retaining and protecting existing environmental, natural and heritage resources.
- Restoration – Adding to the Green Infrastructure wherever possible.

The Green Infrastructure components are organized into four groups as follows:

- Group One: Natural Resource Assets (River and Stream Corridors; Scenic Rivers and the Potomac River; Surface and Groundwater Resources; Geologic and Soil Resources; Forests, Trees and Vegetation; and Plant and Wildlife Habitats)
- Group Two: Heritage Resource Assets (Historic and Archaeological Resources, and Scenic Areas and Corridors)
- Group Three: Open Space Assets (Greenways and Trails, Parks and Recreation, Public School Sites, and Open Space Easements)
- Group Four: Complementary Elements (Air Quality, Lighting and the Night Sky, and Aural Environment)

The Green Infrastructure resources are interdependent and many of the implementation strategies will protect integrated systems, rather than individual resources. Implementation includes the following:

- Identification and mapping of the Green Infrastructure.

- Regulatory protection of the Green Infrastructure. Incentives for adding to the Green Infrastructure.
- Provisions for public and private stewardship.
- Education program about the Green Infrastructure.

Green Infrastructure Policies

1. The County recognizes its Green Infrastructure as a collection of natural, cultural, heritage, environmental, protected, passive, and active resources that will be integrated in a related system. It will provide the framework for strategic land use planning policies, provide the context for all development and ensure quality of life throughout the County. It includes major rivers, stream corridors, floodplains and wetlands; lakes; reservoirs and impoundments; limestone conglomerate, mineral resources and prime agricultural soils; steep slopes; ridges and mountain-sides; protected forests and vegetative landscapes; wildlife and endangered species habitats; heritage resources; scenic corridors, parks, greenways, trails, and recreational facilities.

2. The County will use integrated management strategies in using the Green Infrastructure to ensure that all land use planning and development respect and preserve the holistic nature of the elements of the Green Infrastructure.

3. The County recognizes that much of its Green Infrastructure is made up of natural resources that are fragile and irreplaceable and, therefore, will protect and preserve these resources in perpetuity. All natural resources will be protected and preserved to the extent that such protection and preservation is consistent with other policies of this Plan. The County's watersheds are the key natural resource element in the Green Infrastructure and will be used as its primary organizing unit.

4. The County will prepare and maintain a map of the Green Infrastructure and its elements, and identify the location of future Green Infrastructure elements as part of an integrated system and contiguous network of natural and passive open spaces, and active recreational sites.

5. A conservation design method will be applied during the land development and redevelopment processes. Elements of the Green Infrastructure will be identified with the initial submission of each proposal, as a guide to the placement of structures, drainage, utilities, and roads. Regulations will be developed with performance standards that will direct their placement.

6. The County will develop a form of conservation easement to protect open space areas in subdivisions and to ensure long-term maintenance and protection of the area. Such easements will be recorded as part of the subdivision process.

7. The *Facilities Standards Manual*, the *Land Subdivision and Development Ordinance*, and other pertinent administrative documents will be revised to implement management strategies and to model development principles based on the Green Infrastructure.

8. The County will develop reasonable criteria for open-space dedications and will expect all landowners to dedicate land, or provide fees in lieu, for general open space and/or parks. These criteria will be designed to mitigate the impacts of their development and provide open space resources for the future users and occupants of the development.

9. The County will proactively promote private, state and federal conservation programs and their allocated resources to advance conservation programs within the County through public and private means such as

grants, voluntary easements, dedications, etc.

The Built Environment

The County will prepare and implement guidelines, incentives and regulatory measures to achieve a built environment that:

- Protects, enhances and helps to sustain the natural environment.
- Protects the health and safety of the community, provides for the quiet enjoyment of private property, and promotes the well-being of the County's inhabitants by being aesthetically attractive and varied and stimulating in its forms, scale and materials.
- Is pedestrian friendly, has a clear overall structure in its communities and neighborhoods which makes it easy for the individual to orient himself or herself in those communities and neighborhoods, and helps to establish a unique identity and sense of place in each community.
- Is cost effective for both the private and public sectors in its spatial layout and in the construction, operation and maintenance of its public facilities.

Built Environment Policies

1. The County will achieve and sustain a Built Environment of high quality, recognizing the importance of this for the health, safety, convenience and general welfare of the County's residents and visitors and its importance for the vitality of the County's economy in attracting and sustaining private investment.

2. The Built Environment will be designed with the recognition that healthy ecosystems provide benefits that include air and water cleansing, water supply protection, erosion and sediment control, hazard mitigation, habitat protection and restoration, waste decomposition and treatment, human health and well-being, and cultural resource protection.

3. ~~2.~~ In implementing its program for achieving and sustaining a Built Environment of high quality, the County will emphasize its role as leader and facilitator, and as a source of information on environmental design options and procedures, rather than as a regulator. It also will emphasize the use of incentives for innovation and good design and collaborative public/private/community partnerships for program implementation. These incentives will include provision for two annual awards of certificates of excellence in environmental design. One for the private enterprise meeting standards of excellence established for this award and one for the community group achieving analogous standards of excellence in community-based environmental design and maintenance.

Group One: Natural Resource Assets

Natural Resource Assets are the elements of the Green Infrastructure that represent the most natural settings in the County, including River and Stream Corridors; Scenic Rivers and the Potomac River; Surface and Groundwater Resources; Geologic and Soil Resources; Forests, Trees and Vegetation; and Plant and Wildlife Habitats. These elements are or will be in a combination of private and public ownership. The goal for this group of elements is both preservation and, wherever practical, restoration of their natural state and functional integrity.

A. River and Stream Corridors ~~Resources~~

The County's river and stream corridors are the largest system in the Green Infrastructure, comprising the largest natural ecosystem, supporting air quality, water quality and biological diversity. In addition to ~~the~~ rivers and streams ~~that drain 100 acres or more~~, the corridors include associated ~~100-year~~ floodplains, wetlands, and vegetated riparian areas ~~adjacent steep slope areas~~. The river and stream corridors also contain steep slopes ~~wetlands~~ and ~~riparian forests and~~ many of the County's important historic, cultural, and archaeological sites.

Because of the enormous diversity and importance of the natural systems of river and stream corridors, the County desires to protect these corridors by preserving, conserving, and restoring their water quality, flood protection, aquatic and wildlife habitat, and scenic value.

~~To accomplish these objectives, the County will adopt a River and Stream Corridor Overlay District (RSCOD) that will protect these critical resources. (Refer to River and Stream Corridor Resources Map, pg. 5-7).~~

~~The RSCOD contains rivers and streams draining 100 acres or more; associated 100-year floodplains; adjacent steep slope areas; a management buffer around floodplains and adjacent steep slopes; a minimum no-build stream buffer; and wetlands, riparian forests, and historic and archaeological sites to the extent that they fall within the RSCOD. The 50-foot Management Buffer is flexible.~~

Of particular importance are vegetated riparian areas, which offer benefits to life both on the land and in the water. Riparian areas are lands adjacent to a body of water, such as a river, stream, marsh, or shoreline, that form the transition between the aquatic and terrestrial environments. These streamside systems ~~The river and stream corridor system can~~ filter runoff and land-based pollution, transform and store nutrients, filter airborne pollutants and produce oxygen (where riparian forests are encouraged), provide shade and keep water temperatures cool, store flood waters and reduce floodway velocities, stabilize floodplains, serve as groundwater recharge areas, provide food and habitat for aquatic life ~~fish~~ and wildlife, and improve overall water quality. Loudoun's river and stream corridors also provide many scenic, passive recreation, and educational opportunities.

The County will strive to establish a working public and private partnership with property owners, acknowledging that river and stream corridors ~~the RSCOD~~ will remain largely in private ownership. The County will also pursue acquisition of appropriate river and stream corridor assets through open space dedication or easement, purchase of development rights, and other such programs to ensure the protection of these resources for the public good.

The County will strive to preserve, protect, and manage river and stream corridors ~~the RSCOD~~ through policy and regulation, and the development and implementation of strict performance standards, best management practice requirements, and permissible uses.

To help accomplish these objectives, the County will adopt elements of the Chesapeake Bay Preservation Act (refer to Chesapeake Bay Preservation Area Map). In addition to adopting elements of the Chesapeake Bay Preservation Act, the County will actively support the Chesapeake 2000 Agreement and Executive Order 13508 (Chesapeake Bay Protection and Restoration). The Chesapeake Bay Preservation Act, the Chesapeake 2000 Agreement, and Executive Order 13508 recognize the role of localities in water protection and are key components in reducing pollution, protecting and restoring water resources, and ensuring ecosystem health. To achieve these goals, the County supports watershed-based planning, including the comprehensive assessment and long-term monitoring of water resources, implementation measures, and education and outreach.

River and Stream Corridor ~~Resources~~ Policies

1. The County recognizes the importance of river and stream corridors to the health, safety and welfare of its citizens, and establishes the following objectives for its river and stream corridors ~~of the RSCOD to~~:

   a. Protect a dynamic and healthy river and stream corridor ecosystem.

   b. Ensure that water is clean and safe.

   c. Protect against the damages of soil erosion and flooding.

   d. Fulfill aquatic life ~~fish~~ and wildlife needs.

   e. Perpetuate biological diversity and natural resource management for their educational, enjoyment and aesthetic value.

   f. Encourage protection of the Chesapeake Bay and its tributaries.

2. The County recognizes the holistic nature of its river and stream corridors and will focus protection and restoration efforts on the following river~~s~~ and stream~~s and their~~ corridor~~s~~ resources ~~through the creation of a River and Stream Corridor Overlay District (RSCOD), which will include~~:

   a. Rivers and streams ~~draining 100 acres or more~~.

   b. Lakes and ponds (natural and constructed).

   c ~~b~~. ~~100-year~~ F~~f~~loodplains ~~(including major and minor)~~.

   d ~~c~~. ~~Adjacent steep slopes (slope 25 percent or greater, starting within 50 feet of streams and floodplains, extending no farther than 100 feet beyond the originating stream or floodplain)~~ Wetlands.

   e ~~d~~. Riparian areas ~~50-foot Management Buffer surrounding the floodplains and adjacent steep slopes~~.

   f ~~e~~. ~~Wetlands,~~ F~~f~~orests, historic and cultural resources, ~~and~~ archaeological sites, and steep slopes (slopes greater than 25 percent) that fall within the area of one or more of the above elements.

3. The County will preserve, protect, and manage river and stream corridor resources through policy and regulation, the development and implementation of performance standards, and best management practices. ~~A 100-foot minimum stream buffer will protect rivers and streams when the 100-year floodplain and adjacent steep slope areas do not extend beyond either bank by 100 feet, and will be considered part of the RSCOD. The minimum stream buffer is measured from the scar line landward on both sides of the stream. The minimum stream buffer provides a minimum filtration area that will ensure the maintenance of water quality and the integrity of the stream corridor. The 50-foot Management Buffer will not be added to the 100-foot minimum stream buffer.~~

~~16. The Zoning Ordinance will be amended, including but not limited to Floodplain Overlay District (FOD) and Scenic Creek Valley Buffer sections, to address and satisfy the ecosystem, water quality, flood protection, habitat, and use objectives of the RSCOD. Amending County ordinances and regulations will also establish strict performance standards and best management practice requirements.~~ Permitted uses in river and stream corridors are intended to have minimal adverse effects on ecosystems, habitats, aquatic life, wildlife, vegetated riparian areas, wetlands, historic resources, cultural resources, and archaeological sites. Performance standards and criteria will help ensure the health and biological integrity of the river and stream corridors, protect their hydrologic processes, including flood protection and water quality, and minimize adverse impacts. Requiring best management practices for the activities permitted in river and stream corridors ~~the RSCOD~~ will help ~~to protect and~~ conserve, protect, and complement corridor ~~its~~

natural resources and their processes, to ~~and~~ ensure both economic and ecological success.

4. The County will adopt elements of the Chesapeake Bay Preservation Act to include a Resource Protection Area (RPA), a countywide Resource Management Area (RMA), and performance standards. Uses within river and stream corridors will be governed by the County-adopted provisions of the Chesapeake Bay Preservation Act; a Floodplain Overlay District; a Scenic Creek Valley Buffer; Steep Slope Performance Standards; and federal and State regulations related to the Clean Water Act. These regulations will be revised as necessary to ensure consistency with the River and Stream Corridor policies.

~~4. The 50-foot Management Buffer will protect the other RSCOD elements from upland disturbances and adjacent development. Only uses consistent with the objectives and functions of the overall RSCOD will be permitted in the Management Buffer.~~

5. Uses are encouraged in the RMA and RPA that minimize land disturbance, minimize impervious cover, protect and restore indigenous vegetation, allow public access to river and stream resources, and allow access to and interpretation of cultural landscapes, historic resources, and archaeological sites. Performance standards for permitted uses will be outlined in County regulatory documents.

~~5. The 50-foot Management Buffer can be reduced if it can be shown that a reduction does not adversely impact the other RSCOD elements, and that performance standards and criteria, developed as part of the implementation of the river and stream corridor policies, are met and maintained. Reducing the Management Buffer may also ensure that an undeveloped residential parcel that would otherwise suffer from the placement of the Management Buffer may develop to its potential.~~

6. ~~Wetlands, r~~ Riparian forests, ~~and~~ historic and archaeological sites, and steep slopes located within ~~the~~ river and stream corridors ~~RSCOD~~ will be protected in accordance with County-adopted ~~RSCOD~~ performance standards and best management practice requirements.

7. ~~The County will consider adoption of the environmental regulations of the Chesapeake Bay Preservation Act (Bay Act).~~ The County will ~~seek to achieve those objectives of the Bay Act that are in the best interest of the County, and will~~ actively participate in water quality initiatives to protect and improve regional water quality.

8. The County will use watersheds as the basis for water resources planning and management. A watershed-based approach is a flexible framework for managing water resource quality and quantity within a specified drainage area ~~or watershed~~. This approach includes stakeholder involvement and management actions supported by sound science and appropriate technology.

9. The County supports watershed-based strategies to reduce nutrient and sediment loading into rivers and streams.

10. To minimize adverse effects on water resources and aquatic life, a vegetated buffer that is effective in retarding runoff, preventing erosion, and filtering nonpoint source pollution will be retained if present and established where it does not exist adjacent to perennial water bodies and connected wetlands.

11. ~~8.~~ The County recognizes the river and stream corridors as an essential natural element of the regional eco-system. River and stream corridors will remain largely in private ownership, but the County will pursue acquisition of key resources as part of other open space and purchase of development rights programs. The County will actively pursue a joint public and private partnership for the preservation, conservation, restoration, and management of the resources in river and stream corridors ~~the RSCOD~~.

~~9. The County will develop and use incentives to encourage property owners to adhere to the performance criteria of the RSCOD.~~

12. ~~10.~~ The County will develop and use additional incentives to supplement federal and state cost-share programs for water quality improvement projects. The County will provide landowners and contractors with information regarding cost-share programs ~~incentives~~ such as the State Agricultural Best Management Practice and Conservation Reserve Enhancement Program to encourage property-owners to establish and maintain ~~a~~ vegetated ~~100-foot minimum~~ riparian stream buffers and to adhere to County-adopted performance criteria ~~of the RSCOD in agricultural areas~~.

13. The County encourages development practices that protect the functional integrity of site resources while reserving sufficient area for the proposed uses on each proposed lot or parcel.

14. ~~11. River and stream segments draining less than 100 acres are not included in the RSCOD. The County encourages the protection and preservation of these smaller segments through the application of C~~conservation design techniques ~~that~~ will minimize disturbance and modification of riparian areas outside of the RPA, intermittent streams, wetlands connected to intermittent streams, and isolated wetlands ~~such streams~~ through the land development and the wetland permitting processes. The County encourages the protection, preservation, and enhancement of these resources.

15. ~~13.~~ The County will continue to ~~develop a~~ partner~~ship~~ with the U.S. Army Corps of Engineers (USACE ~~COE~~) and Virginia Department of Environmental Quality (DEQ) regional offices, responsible for implementing federal and State wetland~~s~~ regulations, to regulate wetlands and jurisdictional waters, including perennial and intermittent streams ~~outside of the RSCOD~~. Resource protection measures will include avoidance, impact minimization, and compensatory mitigation.

16. ~~23.~~ The County ~~will~~ supports the federal and State goals of no net loss of ~~to~~ wetland~~s~~ acreage and functions in the County and will identify optimum receiving sites with priority to each geographic Policy Area within river and stream corridors ~~the RSCOD~~ for the construction of new wetlands in association with adjacent stormwater management best management practices or required as part of federal wetland mitigation programs.

17. ~~22.~~ The County will develop a reliable wetlands inventory and map of wetland areas both inside and outside of river and stream corridors ~~the RSCOD~~ Countywide. This inventory and map will include identification of specific vegetative cover and hydrology information such as soil drainage and hydric soils.

18. ~~17.~~ County regulations ~~The Zoning Ordinance~~ will ~~be amended to~~ address non-conformities for existing structures ~~residences~~ and for undeveloped ~~residential~~ parcels that fall within river and stream corridors or the buffers of ~~the RSCOD,~~ public water supply sources and reservoirs, scenic rivers, and the Potomac River.

~~18. The County will only allow development and uses in the RSCOD that will support or enhance the biological integrity and health of the river and stream corridor. Permitted uses are intended to have minimal adverse effects on wildlife, aquatic life, and their habitats; riparian forests, wetlands, and historic and archaeological sites; and will be required to complement the hydrologic processes of the river and stream corridors – including flood protection and water quality. Uses will be limited to:~~

~~a. Road crossings, rail crossings, bridges and drive-way crossings (only when the environmental objectives of the RSCOD can be maintained or enhanced).~~

~~b. Utilities and utility rights-of-way (only when the environmental objectives of the RSCOD can be maintained or enhanced).~~

~~c. Local and regional stormwater management facilities (subject to best management practice requirements).~~

~~d. Public lakes and ponds (subject to best management practice requirements).~~

~~e. Public water supply reservoirs.~~

~~f. Historic and archaeological sites.~~

~~g. Paths and trails including footpaths, biking or hiking paths, and horse trails (of a permeable material only).~~

~~h. Passive recreation limited to hiking, biking, horseback riding, picnicking, camping, climbing, hunting, fishing, and wildlife viewing.~~

~~i. Active recreation including physical education, athletic fields, and supporting athletic elements (such as but not limited to: goals, goal posts, back stops, dug outs, fences, etc.), in minor floodplains based on standards developed. Swimming and non-powered boating on the rivers and streams only (where specific public points of entry have been identified).~~

~~j. Agricultural activities, but not structures including crop planting and harvesting, and grazing (subject to appropriate best management practice requirements).~~

~~k. Silviculture as required to care for forests and not commercial forestry (limited to forest preservation and tree planting; limited tree clearing and clearing of invasive species; tree trimming and pruning; and removal of individual trees; subject to appropriate best management practice requirements).~~

~~l. Planting native vegetation (subject to appropriate best management practice requirements).~~

~~m. Conservation including stream restoration projects, facilities and activities; Adopt-A-Stream programs; scientific, nature and archaeological studies; and education programs.~~

19. Full density credit will be provided for the gross area of the RPA, RMA, and floodplain ~~the RSCOD~~ on a given parcel when that parcel is being developed.

20. The County will maintain a working relationship with the Federal Insurance Administration of the Federal Emergency Management Agency (FEMA) for continued participation in the National Flood Insurance Program (NFIP). The County will also commit resources to maintain the County's flood maps as a Cooperating Technical Community (CTC) in FEMA's Flood Map Modernization program.

21. The County will promote and encourage participation in the "Adopt-A-Stream" programs in order to keep river and stream corridors free of litter and debris and as a means of promoting public awareness of the County's river and stream corridors.

22. ~~12.~~ Steep slopes (slopes greater than 25 percent) and moderately steep slopes (slopes of 15 to 25 percent) that are outside of riparian areas ~~the RSCOD are not governed by river and stream corridor policies. These steep slopes~~ will be governed by separate Steep Slopes and Moderately Steep Slopes policies.

23. ~~14.~~ Forests and trees that are outside of river and stream corridors ~~the RSCOD~~ are not governed by the ~~r~~River and ~~s~~Stream ~~c~~Corridor policies. Separate Forests, Trees and Vegetation and, where appropriate, Air Quality policies will govern these forest areas and trees.

24. ~~15.~~ Historic and archaeological sites outside of river and stream corridors ~~the RSCOD are not governed by river and stream corridor policies. These sites~~ will be governed by separate Historic and Archaeological Resources policies.

~~24. The County will study the design and implementation of the RSCOD with rivers and streams draining 70~~

~~acres or more and adjacent steep slopes of 15 percent or greater.~~

B. Scenic Rivers and the Potomac River

The Catoctin Creek from Waterford to the Potomac River, and Goose Creek from the Fauquier and Loudoun County lines to the Potomac River, are "Scenic Rivers" as designated by the Commonwealth of Virginia. The Scenic Rivers Program provides these rivers special status through legislative designation and aids in establishing appropriate protection and management standards to maintain their scenic value. The Goose Creek and Catoctin Creek Scenic River Advisory Boards, appointed by the Governor of Virginia, actively seek to preserve the integrity of these rivers and their surroundings.

As an important part of the County's river and stream corridor system, protection of these Scenic Rivers will also be coordinated with the County's River and Stream Corridor ~~Overlay District (RSCOD)~~ policies and regulations. The County will also work to preserve the scenic character of its Potomac River shoreline by creating Loudoun's portion of the Potomac Heritage Trail. Open space easements have already been placed on much of the Potomac River shoreline east of Route 28 as part of this effort.

Scenic Rivers and Potomac River Policies

1. The County will protect Scenic Rivers and the Potomac River by defining a protection area as a 300-foot no-build buffer or the limits of the RPA and floodplain ~~RSCOD~~, whichever is greater. Development potential may be transferred from the no-build buffer according to density transfer guidelines provided by this Plan. The County-adopted ~~RSCOD~~ performance standards, best management practice requirements, and list of permitted uses will apply to the no-build buffer.

2. The County will define and identify the viewsheds along these waterways and establish policies to guide development in these areas in order to protect their environmental and scenic quality.

3. The County will complete and execute a plan for acquiring and managing open space corridors along the County's officially designated Scenic Rivers.

4. The County will not permit diversion of Scenic Rivers under any circumstances.

5. The County will prepare and implement corridor management plans for the County's Scenic Rivers.

6. The Zoning Ordinance will be amended so that docks will be Special Exception uses, designed and built to maintain the existing natural and scenic character of the shoreline of Scenic Rivers.

7. The County will develop and implement a Potomac River shoreline management plan, and seek to coordinate this effort with adjacent jurisdictions (local, state, regional organizations, advisory boards, and citizen groups). This Plan should include:

    a. The boundaries of the study area;

    b. A comprehensive natural resources inventory;

    c. Policy recommendations for river corridor management and protection;

    d. A process for integrating the participating groups; and

    e. A plan for acquiring and managing open space corridors along the Potomac River with a preference

given to mechanisms such as proffers, other donations, and purchase in efforts to acquire land and/or easements.

8. The County will establish a strategy to expand passive recreational use of Scenic Rivers and the Potomac River. This strategy will be consistent with the overall Green Infrastructure policies and will prohibit ground-disturbing activities such as paved road and structure construction.

9. The County will seek proffers from developers for public access trails along the Potomac River and designated sections of Goose and Catoctin Creeks.

10. The County will seek to complete its portion of the Potomac Heritage Trail through public and private efforts as proactively coordinated with County resources.

C. Surface and Groundwater Resources

Major water resource issues for the County include ensuring an adequate supply of drinking water, protecting groundwater and surface water (i.e., streams and wetlands) from contamination and pollution, and preventing the degradation of water quality in watersheds. (Refer to Major and Sub Watersheds Map, pg. 5-13)

For most of the County's history the threats to surface and groundwater quality have been from rural land use. Soil erosion, nutrient enrichment, fecal coliform contamination, and various toxic chemicals have contributed to the degradation of surface and groundwater quality. Currently, nine stream segments in Loudoun have been placed on the state's impaired waters list by the Virginia Department of Environmental Quality (DEQ) for excessive levels of fecal coliform. As shown on the Virginia Impaired Water Segments 1998 list, they are:

- Catoctin Creek for 7.4 river miles.
- North Fork Catoctin Creek for 10.53 river miles.
- South Fork Catoctin Creek for 6.01 river miles.
- Little River for 6.25 river miles.
- Piney Run for 3.87 river miles.
- Cromwell's Run for 3.81 river miles.
- Sycolin Creek for 6.83 river miles.
- Beaverdam Creek (western) for 6.43 river miles.
- North Fork Goose Creek for 4.5 river miles.

Groundwater, supplied through wells and springs, is the primary source of drinking water for residents of the western Towns and rural areas. Additional factors such as poorly sited drainfields and drainfield saturation, high water tables, lack of septic tank maintenance, leaking sewer lines, improper disposal of household hazardous waste, and leaking or abandoned underground storage tanks can threaten the quality of wells, springs and groundwater. In addition, a preponderance of on-site, in-soil sewage disposal and wastewater treatment systems used in this part of the County has the potential to directly impact individual health as effluent passes directly into the groundwater that feeds the wells that provide drinking water.

The rapid development of eastern Loudoun since the mid-1990s has brought a new set of water resource challenges, including an increase in impervious land cover. Rainwater that once filtered through the soil to

replenish groundwater is now kept above ground artificially and carried via culverts and stormwater pipes directly to local streams. This diminishes groundwater capacity, which is particularly noticeable in the summer months as streams dry up, and aquatic habitats are damaged. The County's hydrologic soil groups and hydric soils can be indicators of surface water saturation, runoff, and infiltration rates. (Refer to Hydric Soils Map, pg. 5-15)

Streams are damaged as they take in stormwater from man-made systems, which transport water in much higher volumes and at much greater velocities than natural systems. The rushing water causes streambed scouring, as well as erosion of stream banks. Stormwater is also polluted by substances deposited on the impervious ground cover such as litter, road salt, oil, grease, and metals from automobiles.

~~The establishment of the River and Stream Corridor Overlay District (RSCOD) is key to protecting Loudoun County's water resources.~~ Protecting rivers and streams, retaining natural riparian forests and vegetation, protecting wetlands; and preservation, buffering, and the implementation of performance standards and best management practice requirements in developing and redeveloping areas are all necessary components of a water protection strategy. At the same time, development should be guided by flexible regulations that encourage innovative site design and mitigation measures in order to protect the natural environment and protect and improve water quality.

A number of state and federal mandates now require the County to take on certain water protection responsibilities in addition to the federal Clean Water Act. Under these programs, maximum pollutant-loads will be set by the state for a number of County streams. The programs also require the County to control pollution from land uses served by storm sewer to the maximum extent practicable.

In addition to adopting elements of the Chesapeake Bay Preservation Act, the County will actively support the Chesapeake 2000 Agreement and Executive Order 13508 (Chesapeake Bay Protection and Restoration), which are key components in protecting water resources. These documents recognize the role of localities in water protection and emphasize watershed-based planning. The County supports watershed-based planning, including the comprehensive assessment and long-term monitoring of water resources, implementation measures, and education and outreach. The County will investigate the causes of water degradation and work with government agencies and citizen groups to reduce nutrient, bacteria, and sediment loading into receiving streams.

Two sets of policies—one for Surface Water and one for Groundwater—are provided below. These policies establish County water quality goals, define protective measures and management objectives, and establish development parameters for areas around water sources.

Surface Water Policies

1. The County supports a watershed-based approach to the protection of surface water resources, including the comprehensive assessment and long-term monitoring of water resources, implementation measures, and education and outreach. The County will be responsible for the compilation and interpretation of water quality data and assessments from all sources, including federal agencies, State agencies, and local volunteer organizations.

2. ~~1.~~ The County will fully protect, through easement, fee simple acquisition, regulatory measures or other sufficient measures, the lands that are critical to the quality of key water supplies. These areas will be re-naturalized, if necessary, to restore filtration and erosion control functions.

3. ~~2.~~ The County will promote water conservation through innovative, cost effective reuse systems, domestic water saving devices, and low impact development techniques, which integrate hydrologically functional designs with methods for preventing pollution and through informed household use.

4. ~~3.~~ The County will protect the headwaters of the Catoctin and Goose Creeks by establishing appropriate regulations for the Catoctin, Shorthill Mountain and the Blue Ridge, to limit diversions of water from the headwaters and to prevent stream pollution.

5. ~~4.~~ The County will support community programs to keep shorelines and water bodies free from debris and litter.

6. ~~5.~~ The County will establish appropriate standards including adoption of the Virginia Stormwater Management Handbook to protect natural streams from the harmful effects of increased stormwater volume and velocity resulting from development.

7. ~~6.~~ The County recognizes that soil erosion and deposits of sediment in receiving streams and water bodies is the single largest contributor to degradation of stream water quality and loss of aquatic habitat. The County will establish appropriate standards by which to regulate erosion and sedimentation.

8. ~~7.~~ The County will establish appropriate standards and land uses to protect drinking water supplies from depletion and pollution.

9. ~~8.~~ The County will protect the Bull Run as an important regional water source and supplier to the Occoquan Reservoir by defining a protection area as a 300-foot no-build buffer or the limits of the RPA and floodplain ~~RSCOD~~, whichever is greater. An additional 200-foot transitional buffer will also be maintained beyond the no-build buffer. Development potential may be transferred from the no-build buffer according to density transfer guidelines provided by this Plan. County-adopted ~~The RSCOD~~ performance standards, best management practice requirements and list of permitted uses will apply to the no-build buffer. Performance standards and a list of permitted uses for the transitional buffer will be defined as part of the implementation of this policy.

10. ~~9.~~ The County will develop and implement a watershed management plan and a watershed overlay district for all public water supply reservoir watersheds, establishing more stringent development guidelines and performance standards to protect water quality.

11. ~~10.~~ The County will protect public water supply reservoirs by defining a protection area for all reservoirs as a 300-foot no-build buffer or the limits of the RPA and floodplain ~~RSCOD~~, whichever is greater. Development potential may be transferred from this buffer area according to density transfer guidelines provided by this Plan. County-adopted ~~The RSCOD~~ performance standards, best management practice requirements, and list of permitted uses will be applied to the no-build buffer.

12. ~~11.~~ In cooperation with the LCSA, the County will set the limits of the 300-foot no-build buffer for reservoirs based on their projected expansion, so that when the proposed expansion occurs the 300-foot buffer will already be established and the area protected from development.

13. ~~12.~~ To further protect public water supply reservoirs and their contributing streams beyond established protection buffers, the County encourages the clustering of development away from designated public water sources and reservoirs and their buffers.

14. The County will coordinate with federal and State agencies regarding strategies to reduce nutrient, bacteria, and sediment loading into receiving streams. The County will pursue water quality initiatives to address the sources of these contaminants.

15. ~~13.~~ The County will work with the incorporated Towns, in conjunction with the Clean Water Act, to establish overall water quality goals and specific standards for individual streams and river and stream corridors, consistent with C~~c~~ounty river and stream corridor objectives and policies.

16. Working with government agencies and citizen groups, the County will support on-going water quality monitoring to assess water quality within the County, improve stream conditions, and delist impaired waters. The County will share assessment results and trends with elected and appointed officials, residents, and businesses.

17. ~~14.~~ The County will prepare and implement a pollution prevention program to improve the County's surface water quality in a proactive fashion by working with other entities such as the Loudoun County Soil and Water Conservation District (LSWCD) to coordinate and technically reinforce various ongoing water quality activities and efforts.

18. ~~15.~~ The County will comply with Phase II National Pollutant Discharge Elimination System (NPDES) stormwater regulations under the federal Clean Water Act, which requires the County's municipal storm sewer system to be regulated as a discrete source of pollution. The County will meet NPDES requirements prior to the permit filing date in 2003. The Clean Water Act requires regulated jurisdictions, including Loudoun, to address six components of a surface water quality management program to obtain an NPDES permit. These include: (1) public outreach and education; (2) public involvement and participation; (3) illicit discharge detection and elimination; (4) construction site stormwater runoff control; (5) post-construction stormwater management; and (6) pollution prevention, or "good housekeeping", for municipal operations.

19. ~~16.~~ The County will prepare and implement design standards and principles to preserve open space and natural resources, minimize the creation of new impervious areas and to minimize increases in post-development runoff peak rate, frequency and volume. To the extent possible, these alternatives will recognize the unique characteristics of different properties and the densities and uses recommended by this Plan.

20. The County will support an education and outreach program and regularly share information regarding water protection strategies with agricultural, residential, business, and other interested groups as a cost-effective strategy to promote water quality improvements.

21. ~~17.~~ The County will establish appropriate standards by which to regulate stormwater detention or retention to better protect the integrity of receiving streams.

~~18. The County will institute development standards for golf courses and restrict development of golf courses in proximity to water resources such as streams, rivers, reservoirs or floodplains to deter any degradation of these resources as a result of the golf course use. Golf courses may be allowed within the boundaries of floodplains only by Special Exception.~~

22. ~~19.~~ In suburban areas, water access should be provided for recreational uses in accordance with the County-adopted provisions of the Chesapeake Bay Preservation Act. These areas will be designated in local area plans. Where paved surfaces are needed, they should be constructed of pervious paving materials when practicable ~~structurally feasible~~.

23. ~~20.~~ In addition to adopting elements of the Chesapeake Bay Preservation Act, Loudoun County will endorse and actively support the interstate Chesapeake 2000 Agreement and Executive Order 13508 (Chesapeake Bay Protection and Restoration), which recognize the role of localities in water protection. The Chesapeake 2000 Agreement is~~,~~ a watershed partnership signed by the governors of Virginia, Maryland, and Pennsylvania, as well as the District of Columbia and the U.S. Environmental Protection Agency (EPA). The Agreement commits Virginia to: (1) living resources protection and restoration; (2) vital habitat protection and restoration; (3) water quality restoration and protection; (4) sound land use; and (5) individual responsibility and community engagement. Executive Order 13508 advocates a renewed commitment to controlling pollution from all sources, protecting and restoring habitat and living

resources, conserving lands, and improving management of natural resources, all of which contribute to improved water quality and ecosystem health.

24. ~~21~~. The County will require secondary containment, treatment, and emergency response plans for activities that propose pollution sources such as the storing and dispensing of petroleum products, chemical storage and sale or transfer of potential contaminants.

Groundwater Policies

1. The County will develop and implement a comprehensive groundwater protection strategy and use available data such as that generated by the U. S. Geological Survey (USGS) in the development of such a strategy. The strategy will include the comprehensive assessment and long-term monitoring of water resources, implementation measures, and education and outreach.

2. The County will develop, implement, and maintain a wellhead protection program to protect groundwater from contamination and ensure an adequate level of drinking water quality for the residents of rural Loudoun and western Loudoun Towns that are dependent on groundwater as a water source. In addition, the County will refine and strengthen existing water protection policies and regulations.

3. The County will initiate and maintain a comprehensive pollution management program to protect groundwater resources.

4. The County will periodically assess the recharge rates for groundwater in each watershed by analyzing data from groundwater level monitoring and stream flow measurements. If negative impacts are detected, the information will be presented to the Board of Supervisors for appropriate action, which may include an adjustment to the land use policies within the impacted area.

5. The County will assess the effects of groundwater consumption on the volume of surface water in streams for each watershed and develop and implement regulations to minimize those effects.

6. The County will require developments in the Suburban Policy Area to connect to available central water and sewer systems according to water and wastewater treatment policies in this Plan.

D. Geologic and Soil Resources

1. Limestone Conglomerate Areas

The County seeks to preserve and protect the unique geologic characteristics, natural beauty, tourism potential, and the quality of groundwater in its limestone conglomerate areas. Limestone conglomerate is vulnerable to sinkholes, cavity collapse and ground slippage and cannot environmentally or structurally support land development activities without performance standards and monitoring.

A belt of limestone conglomerate lies north of Leesburg and east of the Catoctin Ridge. (Refer to Limestone Conglomerate Bedrock Map, pg. 5-21) The bedrock in this area includes limestone suspended in a mixture of other geologic materials. Limestone is a carbonate rock and is subject to weathering and the formation of solution channels and sinkholes. In places, limestone bedrock also forms outcrops. Rock outcrops, sinkholes and solution channels function as conduits to the groundwater system that may be susceptible to contaminated surface run-off, leaky fuel tanks and septic tank effluent. Because the location of these channels is not well known, development risks should be considered to exist throughout the limestone conglomerate area.

Increased surface water run-off from development in this area can lead to increased cavity collapse and ground slippage which may affect sewage lagoons, ponds, pipelines and cause groundwater pollution. Ground slippage may also threaten the stability of foundations and structures built on these natural features and overlying soils.

To address the environmental and human health and safety issues in this critical area, the County will establish and maintain zoning regulations for a Limestone Conglomerate Overlay District. This zoning district will be used to support surface and groundwater monitoring, the setting of pollution prevention standards, and the establishment of performance standards governing land use and development.

Limestone Conglomerate Policies

1. The County will define and delineate a Limestone Conglomerate Overlay District based on soil and geologic characteristics.

2. Performance standards will be developed and applied to govern development on areas underlain by limestone because of a high potential for environmental damage, and to ensure public health and safety, including minimum setback distances from sinkholes, rock outcrops, and other Karst features.

3. The County will limit development to large lot or clusters within the Limestone Conglomerate Overlay District to avoid development in areas of identified Karst features.

4. Environmental protection performance standards will be developed and applied for lands within the Limestone Conglomerate Overlay District that do not have rock outcrops.

5. Agriculture, forestry, and passive recreation will be by-right uses in the Limestone Conglomerate Overlay District, but will be subject to performance standards.

6. The County will identify pollution sources and establish appropriate standards for reducing pollution in the Limestone Conglomerate Overlay District.

7. The County will monitor groundwater and surface water in the Limestone Conglomerate Overlay District, and if monitoring recognizes negative impacts, the County will present the information to the Board of Supervisors for appropriate action, which may include an adjustment to the land use policies within the impacted area.

8. The County will require approval of communal water and wastewater systems for new development in the Limestone Conglomerate Overlay District, unless it is demonstrated to the County that other types of systems achieving the same or superior performance standards are suitable.

2. Prime Agricultural Soils

Prime agricultural soils (as defined by the U.S. Department of Agriculture) are soils that are best suited for agricultural use. These soils account for approximately 19 percent of Loudoun County's soils, and are usually found in areas that are nearly level, well drained and watered. Loudoun's best agricultural soils are generally located in the Rural Policy Area. (Refer to Prime Agricultural Soils Map, pg. 5-23)

Because the County has emphasized the rural economy as an important part of its overall economic health, prime farmland and agricultural soils are especially valuable. Once this land-based resource is lost, it cannot be reclaimed. However, like other natural resources in the County, prime agricultural soils are being threatened by residential development. This is because agricultural land is also well suited for development; being well drained, generally found on mildly sloping terrain, and with good drainfield potential.

Soil erosion from development and improper soil management is becoming a significant threat to this resource. Implementation of Prime Agricultural Soils policies will be coordinated with the County's Erosion and

Sediment Control Ordinance and other state and federal programs to appropriately deal with these potential problems. They will also be coordinated with the State Use Value Assessment Program and County-designated Agricultural and Forestal Districts. (Refer to Agricultural Districts Map, pg. 5-27)

Prime Agricultural Soil Policies

1. The County will utilize the Use Value Assessment Program, Agricultural and Forestal Districts and other incentive-based efforts at its disposal to encourage preservation of Prime Agricultural Soils for agricultural uses. The County will improve the Use Value Assessment Program and will develop and implement additional incentive-based regulations, if necessary, to better achieve these purposes.

2. Where development is allowed on prime agricultural soils, the County will require cluster development so that the development will take place on the least desirable soils on the site and the prime soils will be available for agricultural purposes. The quality of soils will be considered in the conservation design process established by the Zoning Ordinance.

3. Where applicable, the County will use the stormwater management and erosion control policies in this plan and in the Loudoun County Erosion and Sediment Control Ordinance to enhance conservation of Prime Agricultural Soils for agricultural uses. The County will improve the Loudoun County Erosion and Sediment Control Ordinance, if necessary, to better achieve these purposes.

4. The County will develop a public education program that will focus on communicating incentive advantages associated with private protection of Prime Agricultural Soils. The County will maintain and make available the Prime Agricultural Soils Map as part of this program. The program will also provide information on the donation of easements, tax and estate planning, and other advantages related to voluntary protection.

5. The County will seek the preservation of prime agricultural soil resources for agricultural, horticultural, and forestal use through regulatory and incentive programs such as the Purchase of Development Rights (PDR) program.

3. Mineral Resource Extraction Areas

Diabase is a hard, brittle rock used as a base component for construction of roads and for building foundations. There are defined belts of this rock, also know as trap rock, south of Leesburg and near Washington Dulles International Airport. These resource areas should be protected from incompatible land uses, particularly residential. Soils with high shrink-swell characteristics often lie on top of these diabase belts and can cause cracked foundations and severe structural damage to buildings.

The crushed-stone quarries that extract diabase are a substantial economic resource. Loudoun County diabase is some of the best rock for concrete and road base material found on the East Coast. Continuing construction activities in the greater Washington area will also ensure that diabase continues to be an important local economic resource.

Quarrying operations and related activities in diabase resource areas present a challenge to County land use planning, because, although they contribute greatly to the County's economy, they may also threaten groundwater and surface water quality. They are also a heavy industrial use and generate heavy truck traffic. The site-specific nature of extraction industries may help the County focus protection on key diabase resource areas. Encouraging buffers or compatible uses on adjacent tracts and adequate transportation routes is part of this effort. The County may also minimize the long-term result of diabase extraction by looking for ways to reclaim abandoned quarries for other uses. The County will establish and maintain zoning regulations for a protective quarry zoning district, and will emphasize the continued viability and compatibility of this important industry.

Mineral Resource Extraction Policies

1. Quarrying is an industry based on the natural resources of the County and shall be encouraged and the resource protected.

2. The County will recognize and protect its viable extraction industry. The County will protect viable quarries and its diabase resource areas from incompatible neighboring uses. New development will take existing quarries into account.

3. The County will foster efficient use of its diabase resource. To help achieve this goal, the County will maintain a quarry zoning district that should provide a total of at least 800 acres in Loudoun County to be set aside for extraction and associated activities. The quarry zoning district will make quarrying a permissible use. No residential uses other than watchman's quarters will be permitted in this district. Non-residential uses will be limited to low coverage, heavy industrial uses that will not be adversely affected by quarry operations.

4. Quarry zoning districts should be located on areas where quarries presently exist and/or in industrial communities where the diabase is within the Ldn 65-noise contour of an airport. Areas within the 65 Ldn noise contour and adjoining existing quarries should be preserved for this purpose.

5. The County will facilitate the long-range planning of quarry sites, including setting aside sufficient land for extraction and creating an environment that will be attractive for future users once the quarrying use is no longer viable.

6. The County will develop and apply standards that seek to protect existing and planned neighboring uses from the negative impacts of resource extraction activities. Such negative impacts might include threats to property values, public health and safety, as well as short- and long-term environmental degradation. Such impacts will be mitigated by buffer requirements, noise mitigation requirements, and other mitigation techniques.

7. Diabase extraction activities must be located with direct access to roads that are constructed to industrial standards. These standards will be applied so that quarries have adequate roads linking them to the regional road network.

8. The County will encourage the innovative and sensitive reuse of quarries and resource extraction sites.

9. An application to permit the development of new quarries or the expansion of existing quarries will include a concept plan for use of the site after extraction is complete.

4. Steep Slopes and Moderately Steep Slopes

Steep slopes and moderately steep slopes occupy an area of approximately 53,000 acres in the County. (Refer to Steep Slopes Map, pg. 5-29) Moderately steep slopes are areas with a 15 to 25 percent grade (identified by Slope Class D on Loudoun County soil maps). Steep slopes refer to more environmentally critical slopes of greater than 25 percent (identified by Slope Class E on Loudoun County soil maps). If improperly used and disturbance occurs, these areas could experience erosion, building and/or road failure, downstream flooding, and other hazards. For this reason, the grade of a steep slope is often a factor of unstable soils. Development on steep slopes often requires high volumes of clearing and "cut and fill." Such earth moving is subject to erosion and sedimentation that causes adverse effects on surface water quality and aquatic habitat.

Steep slopes represent a resource as well as a constraint to development. Steep slopes protected as part of a river and stream corridor or mountainside often serve as forested and vegetative areas that filter stormwater run-off and support various plant and wildlife habitats.

The Steep Slope and Moderately Steep Slope policies apply to all steep and moderately steep slopes in the County that are not within the RPA ~~"adjacent" to a river and stream corridor (as defined in the RSCOD)~~ or located on the mountainside. River and Stream Corridor ~~Resource~~ and/or Mountainside policies govern steep slopes located in those areas.

Steep Slope and Moderately Steep Slope Policies

1. The County will prohibit land disturbance on slopes with a grade of more than 25 percent and/or with the soil Slope Class of E.

2. The County will prohibit construction of roads on slopes with grades over 25 percent with the exception of access easements to existing lots where no other access is possible. Performance standards will be applied to protect the soils, vegetation and other environmental features in areas in which these roads are allowed by special exception.

3. Special performance standards are to be used to protect slopes with grades from 15 to 25 percent and/or with the soil Slope Class of D. These standards will include best management practices, locational clearances for clearing and grading, and approval of natural drainageways.

4. There will be no building on unstable soils, including soil series Morven (soil mapping unit 13), Airmont (27 and 59), Lew (88), and Springwood (90 and 91) as described in the County's Interpretive Guide to the Use of Soils Maps in Loudoun County, Virginia.

5. The County will encourage development rights to be sold, donated or proffered from land with a 15-to-25 percent grade.

5. Mountainside Areas

The County's mountains and mountainside areas contribute to its beauty, quality of life, and geologic uniqueness and are valued by residents and visitors. Mountainsides are highly sensitive to land disturbance and development. In addition to the destruction of prime viewsheds, uncontrolled land disturbance within mountainside areas can cause major soil slippage if trees and vegetation are removed; the soil is disturbed through cutting, filling or blasting; or the moisture level is upset by excessive drawdown or increased water runoff. Mountainsides contain the headwaters to many of the County's streams and are important groundwater recharge areas. They are the location of unique flora, vegetation, and plant communities and provide a variety of wildlife habitats. These features create an environmental system that is unique to this region and that contributes to the scenic character of rural Loudoun County.

The County will control development on the mountain-sides through a Mountainside Development Overlay District (MDOD) that contains land use restrictions and performance standards to minimize the destruction of individual resources and the disturbance of the ecological balance of these resources. The boundaries of the MDOD are based on a range of both technical and aesthetic resource factors for the critical resource elements that include:

- Elevation: Above 700 feet mean sea level for the Short Hill and Blue Ridge Mountains and 550 feet for the Catoctin, Hogback, and Bull Run Mountains.

- Soils: Associated with mountainsides that affect groundwater recharge, slippage potential, and suit-ability for onsite sewage disposal systems.

- Slopes: Moderately steep slopes (15 to 25 percent) and steep slopes (greater than 25 percent).

- Forests: The quality and extent of tree cover, woodlands, and forests.

Mountainside areas are divided into the following areas depending on the elevation and the types of resources present as determined by weighted analytical criteria:

- **Somewhat Sensitive:** Areas at lower elevations with slight or limited environmental and public health, safety, and welfare impacts from development.
- **Sensitive:** Areas at lower elevations with potentially moderate environmental and public health, safety, and welfare impacts from development.
- **Highly Sensitive:** Areas with potentially severe environmental and public health, safety, and welfare impacts from development and all land at higher elevations.

Mountainside Policies

1. The Mountainside Development Overlay District will be defined by elevation, soil types, and the presence of certain natural features such as forests, steep slopes, unstable soils, and groundwater recharge areas that are commonly associated with these areas.
2. All subdivisions of three lots or more will require a Special Exception in Sensitive and Highly Sensitive defined areas.
3. The County will manage development in mountainside areas using performance standards and regulations to minimize negative environmental impacts, minimize land disturbance, protect the ridgelines, maintain woodlands, plant, and wildlife habitats; and preserve natural features and rural character as requirements for approval of the location of proposed development.
4. The County encourages that mountainside areas be placed under permanent open space easement using voluntary donation and public investment through the Purchase of Development Rights program.
5. The County will seek the expansion of recreational opportunities in mountainside areas, including the development of public park sites and improving access to existing recreational facilities such as the Appalachian Trail.
6. Non-compliance with the policies and associated adopted performance and land use standards will be subject to fines and remediation requirements. The County will exercise strict enforcement practices to ensure the preservation of the Mountainside Development Overlay District.

E. Forests, Trees and Vegetation

Loudoun County has some of the state's best hardwood stands for lumber and veneer production. The County's forests and trees also improve air and water quality, offer important habitat for birds, small mammals and other wildlife, and are excellent buffers between communities. Forests and trees conserve energy by providing shade and evaporative cooling through transpiration. They also reduce wind speed and redirect airflow; reduce stormwater runoff and soil erosion; and can increase real property values. Riparian forests along streams provide the greatest single protection of water quality by filtering pollutants from stormwater runoff, capturing sediment, decreasing stream bank erosion, and maintaining the physical, chemical, and biological condition of the stream environment. Land management practices that preserve indigenous vegetation and minimize impervious cover also allow water to soak into the ground during periods of rain to be slowly released during dry periods, mitigating the effects of both flooding and droughts.

Because forests and trees are such a valuable resource in Loudoun, they will be protected for current and future use and enjoyment by establishing a Tree Preservation Ordinance that protects large forest areas, urban forests and individual trees, while preserving existing vegetation and protecting plant and wildlife habitats. Existing vegetation is a superior habitat resource for new tree plantings because they retain essential ecosystem

components that support tree and forest re-growth.

The County will require tree conservation plans to be submitted and approved for each developing parcel at the time of the initial land development application. These plans should be reviewed for conformance with minimum viability standards and the likelihood of long-term forest, tree and vegetation survival.

Forests, Trees and Vegetation Policies

1. The County will seek and encourage—through incentives—the preservation, protection, and management of forest resources for their economic and environmental benefits.

2. Forests and indigenous vegetation will be preserved on steep slopes (greater than 25 percent). On moderately steep slopes (15-to-25 percent grade), clearing will be limited to only essential clearing necessary for home construction, road construction and utility installation. Silviculture activities may be allowed on moderately steep slopes provided that an approved Forest Management Plan is implemented.

3. The submittal and approval of a Forest Management Plan will be required prior to any land development. This plan will demonstrate a management strategy that ensures the long-term sustainability of any designated tree save areas.

4. The County will require property owners pursuing silviculture operations to develop Forest Management Plans using resources available through the Virginia Department of Forestry.

5. The County will promote the preservation of forested areas through the use of Agricultural and Forestal Districts, easements and other voluntary means.

6. Forests are an integral part of the Mountainside Development Overlay District regulations. The County will continue to protect forest resources through the implementation of the Mountainside Development Overlay District.

7. Tree protection will be encouraged along roadways to allow trees to provide shading, reduce peak storm flows, and contribute to the enhancement of the Green Infrastructure.

8. The County will develop and adopt a Tree Preservation Ordinance for the three Policy Areas in the County as a priority.

9. The County will inventory and map, and create and maintain a database of trees and indigenous vegetative resources to be preserved or managed in accordance with County standards. The inventory will include, but not be limited to, old growth forests, significant tree stands, specimen trees, heritage trees, and State or National Champion trees.

10. The County will develop and apply incentive-based approaches to encourage the preservation of existing vegetation and wildlife habitat on developing properties as a priority.

11. The County will explore the protection of inventoried flora, vegetative cover, and plant communities through both regulation and incentive-based approaches.

F. Plant and Wildlife Habitats

Plants and animals play an important role in nature's lifecycle and its ecosystems. For wildlife habitats, large contiguous parcels of natural open space are preferable to more numerous, but disconnected and smaller areas.

While many high-quality plant and animal habitats have already been lost or altered due to land development and the spread of invasive alien plants, the County still has a number of unique and natural habitat areas. The largest contiguous areas of forest and naturally vegetated land are on mountainsides and along stream channels. These areas play a key role in preserving the abundance and diversity of the County's remaining plant and wildlife. They are also a part of the Blue Ridge ecosystem, a 550-mile, contiguous natural area of parks, national forests, federal wilderness and the Appalachian Trail that extends from Georgia to Pennsylvania.

The integrated Green Infrastructure approach will help to prevent habitat fragmentation, while enhancing ecological connections with larger natural areas. The County will strive to protect, preserve, and create large-scale plant and wildlife habitats that overlap with other important resources and resource systems within the Green Infrastructure.

The County will also protect habitat for rare, and threatened and endangered plant and animal species in accordance with the Federal Endangered Species Act. The health and survivability of plants and animals can often foretell future environmental threats to human life and health. Therefore, the County will encourage the study of the biological processes within the natural resource elements of the Green Infrastructure.

Plant and Wildlife Habitats Policies

1. The County will seek to protect areas of natural biodiversity and rare, threatened and endangered plant and animal species through regulations that foster the implementation of the Federal Endangered Species Act.

2. One strategy the County will pursue to protect rare, threatened, and endangered plant and animal species is to preserve their habitat in open space, passive recreation, or nature preserves.

3. The County will promote and support the establishment of public and private nature preserves throughout the County, in addition to Banshee Reeks, as part of the protection of the Green Infrastructure.

4. The County will conserve and protect wildlife habitat through the preservation of a broad range of natural resources such as indigenous vegetation, forest cover, woodlands, floodplains, streams and stream corridors, wetlands, and undeveloped areas associated with steep slopes.

5. The County promotes the preservation and management of existing vegetative cover, and riparian, habitat and wildlife travel corridors (i.e., fencerows and stream valleys) for their native biological diversity and to protect wildlife access to streams and other water sources. Planting of indigenous vegetation will be encouraged and priority will be given to those corridors that connect one or more large, intact nature preserves.

6. The County will establish and implement guidelines and/or incentives to protect wildlife habitat in an effort to protect a broad range of natural resources that cover large areas such as river and stream corridors and mountainsides.

7. The County promotes the protection of the County's vegetative and wildlife resources and the creation of wildlife habitats by encouraging the incorporation of indigenous vegetation into the landscape design of new development and encouraging a compact, concentrated development pattern.

8. The County promotes the removal of invasive alien vegetation as a means of protecting wildlife habitat and preserving the functional integrity of the landscape. Invasive vegetation will be removed in conjunction with the development or redevelopment of a property. The County encourages the continued monitoring and management of invasive species. When assessing control options the following factors will be considered: (1) disruption of natural processes; (2) hazards to human health; (3) effects on desirable

flora and fauna; and (4) overall damage to the environment.

2 ~~8~~. The County will use the Virginia Department of Conservation and Recreation, Division of Natural Heritage's Biological and Conservation Data system to identify Loudoun County's natural heritage resources. These resources include rare, threatened and endangered plant and animal species; exemplary natural communities, habitats, and ecosystems; and other natural features of the County. The County will apply this information in the evaluation of development proposals. For those development applications that have a likely presence of one or more natural heritage resource, the County will require the applicant to conduct a species assessment and develop a plan for impact avoidance in cases where the presence of the species is identified.

10 ~~9~~. The County will encourage the study of natural heritage resources by qualified research organizations such as the Virginia Division of Natural Heritage of the Department of Conservation and Recreation.

Group Two: Heritage Resource Assets

This group includes elements of the Green Infrastructure that have past or present cultural or heritage significance for the County. The identified historic, archaeological and scenic resources, through their preservation and inclusion in the Green Infrastructure, will enrich and perpetuate the County's heritage. These elements are or will mostly be in private ownership, while the public's interest will be addressed through various stewardship and management approaches. Regulation of protective buffers, donation of open-space easements, and performance standards will be used to manage these elements and their relationship to other Green Infrastructure elements with the County. A number of implementation instruments will also be employed, including state and federal programs, County historic districts and zoning regulation, mapping and surveying, and the application of conservation design.

A. Historic and Archaeological Resources

The County has an unusually high number of historic and prehistoric sites that, along with scenic resources, farms and open spaces, are major components of its unique rural character and economy. Over 1,100 historic structures and sites and over 300 archaeological sites have been surveyed and mapped; and there is potential for identifying many more. These heritage structures and sites comprise a valuable resource that has enormous cultural, aesthetic, and economic value to the residents of the County. Along with the rural landscape in which they are set, historic sites represent the County's largest tourist attraction. The County will continue to be aggressive in its efforts to preserve both its heritage and cultural history for the benefit of present and future citizens.

Loudoun County was one of the first jurisdictions in the United States to adopt rural historic districts when the first Aldie, Waterford and Oatlands districts were adopted in 1972, followed by the 10,000-acre Goose Creek District in 1977. There are now six County-administered districts, including Aldie, Bluemont, Goose Creek, Oatlands, Taylorstown, and Waterford. (Refer to Historic Districts Map, pg. 5-37) The incorporated Towns of Leesburg and Middleburg also administer local historic districts through their zoning ordinances. The County has 49 sites that are on both the Virginia Historic Landmarks Register and the National Register of Historic Places. There are also five National Historic Landmarks in the County; including Balls Bluff Battlefield, Dodona Manor, Oatlands Plantation, Oak Hill, and Waterford.

The archaeological sites that are currently mapped are almost entirely prehistoric Native American sites, some of which date to 8,000 BC. Most of the identified prehistoric sites are east of Leesburg where there is

considerable danger of impact from new development, particularly to those sites not in floodplains. These sites represent an important link to the County's past, and every effort will be made to discover and map them before they are lost to development.

Protection for some of the County's historic structures comes from design guidelines contained in the Zoning Ordinance, but the ordinance protects only the designated County-administered historic districts. State and national designations are primarily honorary. Loudoun County will continue its existing protection programs, but refine its policies and regulations to address the potential impacts of land use changes on heritage resources.

In many cases, historic structures are closely linked to their settings. Open space and scenic corridors help to define the context of historic and archaeological structures. The County seeks to define a comprehensive heritage resources policy that recognizes that protecting the environment and rural character of Loudoun County is fundamental to the preservation of valuable historic structures and archaeological sites.

Historic and Archaeological Resources Policies

1. The County will conduct a comprehensive survey of its heritage resource base and will prepare and implement a plan for the preservation and promotion of these resources as an integral part of the economy.

2. The County will base its historic, architectural and archaeological resource strategy on the following:

    a. Preservation of the County's cultural and scenic character by conservation of archaeological sites and historic structures and their settings and major publicly-accessible geological features such as rock outcrops which reveal the County's geological evolution and heritage.

    b. Establishment of land uses compatible with historic, open space, and scenic view areas.

3. The County will conduct a comprehensive architectural and archaeological survey of the County's historic and prehistoric cultural resources. Under federal guidelines, any structure fifty years old or older should be evaluated for historic significance based on criteria set forth in the U.S. Secretary of the Interior's Standards for Archaeology and Historic Preservation (National Historic Preservation Act [16 U.S.C. 470]). Simultaneously, the County's cultural resource inventory will be updated through the land development process.

4. The County will evaluate the historic or archaeological value of inventoried resources based on criteria set forth in the Secretary of the Interior's Standards that include historic content and site integrity. Resources will be evaluated for consideration for State and National Registers.

5. The County will maintain its database by using the County's inventory of cultural resources as a dynamic body of data to be reevaluated as needed and as dictated by land use changes.

6. Concurrent with the countywide cultural resource inventory and evaluation, the County will formalize its research materials and general policies by developing a Preservation Plan for review and adoption by the Board of Supervisors. The Preservation Plan will be incorporated into the County's Comprehensive Plan as the primary planning tool for the protection and preservation of the County's vast cultural resources. Strategies for public education will be addressed in the Plan.

7. Using the data from the comprehensive cultural resource survey, the County will create a County Historic Landmarks Inventory, which will reflect those historic structures and archaeological sites that have local

historic value and represent the prehistoric and historic traditions of Loudoun County. Special consideration will be given for the protection of these sites during the development process.

8. The County will protect structures and other features of historic significance in the context of their natural settings and will work with landowners to convey the historic value of the resource to the community at large. Structures and other features of particular historical significance will be retained, restored, or utilized in adaptive reuse as part of a conservation design process.

9. The County will develop incentives for and give preference to adaptive re-use of historic structures as part of new development, and/or will buffer historic structures and landscapes from new development to maintain a measure of historic context.

10. The State Code enables local governments to give partial tax credits for historic residential and commercial renovations. The County will implement this option as an incentive to homebuyers and developers to encourage adaptive re-use and the preservation of historic structures.

11. The County will require an archaeological and historic resources survey as part of all development applications. This survey must include a plan for recordation and preservation of identified resources and measures for mitigation and adaptive reuse.

12. Prior to issuing a demolition permit for a structure fifty years old or older, the County would be required to assess the historic significance of that structure.

13. The County will work with residents to identify and establish additional Historic Districts.

14. The *Historic District Guidelines* will be updated to include new districts as they are established and to recognize and give appropriate importance to the current rural-suburban character of the Goose Creek Historic District.

15. The boundaries of the County's Historic Cultural Conservation Districts will be amended or extended to coincide with the boundaries of the state's corresponding Historic Districts. This applies to Bluemont, Goose Creek, and Waterford. The County will work with the state to extend the state-registered boundary of Aldie to meet the County Aldie Historic District boundary.

16. The County will develop and implement a program of easements and other programs as methods of ensuring preservation and conservation.

17. The County will pursue certified local government status to be eligible to receive grant money earmarked for heritage resource preservation efforts.

B. Scenic Areas and Corridors

While ideas about what is scenic may vary, people generally agree on what areas and places are the most visually appealing. These areas and places often include many of the same resources (or combinations of resources) that are addressed as part of the County's Green Infrastructure. Often, significant scenic resources coexist with historic structures or are a part of a mountainside area, stream valley or other natural setting.

Scenic views are often associated with the roads, highways, rivers, and streams from which they are most often enjoyed; as well as with agricultural lands, mountainsides and other features that make up these vistas. Loudoun's rural roads, agricultural fields, hedgerows, crop fields, farmhouses, barns, crossroad churches, and villages all contribute to the scenic areas and corridors in the County.

The state has designated Routes 15, 665, 662, 673, 681, 690, 704, 719, 722, 728, 731, 734, and a portion of Route 7 (Colonial Highway, from Route 699 to Route 287, approved February 2001), as Virginia Byways. The County will pursue additional Virginia Byways designations for roads such as Charles Town Pike (Route 9), Harper's Ferry Road (Route 773), Route 50 through the Mosby Heritage Area, and Route 626 in its entirety (including Foxcroft, Bloomfield, and Foggy Bottom Roads). The County will also pursue the establishment of the Beaverdam Historic Roadways District for the 32 rural roads identified as historic, and the Evergreen Mill Road Historic Roadway District. Likewise, Catoctin Creek and Goose Creek have been designated as State Scenic Rivers; and the County has designated historic, mountainside, and river and stream corridor districts that protect elements of the scenic landscape and critical cultural and natural resources.

Scenic Areas and Corridors Policies

1. The County will prepare special provisions such as additional setback depths, protections against clearing frontage vegetation, and for maintaining stone walls and other features in designated scenic areas and corridors.

2. The County will prepare and implement corridor management plans for the County's Virginia Byways. The County will also work proactively with residents to identify potential roadways for Virginia Byway designation by the Commonwealth.

3. The County will pursue Virginia Byways designation by the Commonwealth for Charles Town Pike (Route 9), Harper's Ferry Road (Route 671), Edwards Ferry Road (Route 773), Route 50 (through the Mosby Heritage Area), and Route 626 in its entirety.

4. The County will work proactively with residents to define and designate Historic Roadway Districts. Through public education and outreach efforts, the County will stress the importance of heritage resource protection and preservation as a means to protect and preserve the character of the County's rural roads.

5. The County will work proactively with residents to define and designate Historic Access Corridor Districts. Through public education and outreach efforts, the County will stress the importance of heritage resource protection and preservation as a means to enhance the visual experience along the County's corridors leading into and through historic towns and villages.

6. No street or road should be abandoned to a non-governmental owner if the road can be used as part of a planned trail network.

Group Three: Open Space Assets

Group three includes elements of the Green Infrastructure that are best described as man-made open space, including greenways and trails, parks and recreation, public school sites, and open space easements. These elements can enhance the vibrancy of communities by providing public interaction with nature, ~~and~~ opportunities for outdoor activity, improved water quality, and improved ecosystem health. Open space assets may be held in either private or public ownership or a combination thereof, although public ownership predominates in parks, sport complexes, athletic fields, and greenways and trails.

Regulation of protective buffers, donation of open-space easements, purchase-of-development rights, and performance standards will be used by the County and individual property-owners to manage these elements.

A. Greenways and Trails

The County is committed to establishing an integrated greenways and trails system that will provide for walking, bicycling, and equestrian use. Wherever appropriate, the County system will connect to the system of homeowner association (HOA) trails. The greenways and trails system will provide the vital link between communities and the larger open space assets and natural elements of the Green Infrastructure.

Greenways and Trails Policies

1. The County will prepare and implement a Greenways and Trails Plan identifying desired locations of future greenways and trails and desired connections to neighboring jurisdictions' greenways and trails. Trails may include hiking, biking and equestrian trails. Greenways include areas along rivers and streams that are often ideal for trails. This plan, updated periodically, will be made a part of the Comprehensive Plan.

2. The County's greenways and trails, as depicted in the Greenways and Trails Plan, will serve as a linking element in all policy areas to other components of the Green Infrastructure, and may be used for refuge, recreation, and education and to support improved water quality and ecosystem health. The system should connect to existing trails like the Appalachian Trail in the Rural Policy Area and trails within towns and villages, and link people to the area's natural, recreational, cultural, and commercial resources. Signage on the greenways and trails system will be limited to providing information regarding public facilities, safety, and historic amenities open to the public. Trails within the RPA will be developed in accordance with the County-adopted provisions of the Chesapeake Bay Preservation Act.

3. The County designates priority trails to include:

    a. An extension of the W&OD Trail from its present terminus in Purcellville to its proposed terminus in Bluemont with a foot path extending from Bluemont to the Appalachian Trail;

    b. A 2.4 mile shared-use trail from the western terminus of the W&OD Trail in Purcellville, west to Round Hill through Franklin Park;

    c. A 1.1 mile, pedestrian walkway and bicycle path along Colonial Highway (Business Route 7) between the Town of Hamilton and the Harmony Intermediate School;

    d. A connector between the W&OD Trail in Leesburg and Whites Ferry on the Potomac River (a 4.5 mile connection);

    e. The Potomac Heritage Trail (hiking from Fairfax to Harpers Ferry, WV);

    f. A linear park and shared-use trail along the former Manassas Gap Railroad right-of-way linked to the W&OD Trail, or incorporated into a trail network as depicted on the Green Infrastructure Map on pg. 5-3;

    g. The development of a shared-use trail from the C&O Canal to the Town of Lovettsville along the Route 287 corridor;

    h. The development of a three mile shared-use trail between Algonkian Regional Park and Claude Moore Park; serving the northernmost portion of Cascades south to Claude Moore Park and including a bicycle/pedestrian bridge crossing over Route 7;

    i. Connections to the W&OD Trail, the Sterling, Dulles, Ashburn and Potomac Communities from

Route 28 and Loudoun County Parkway corridors and appropriate developments;

j. Blue Ridge, Catoctin Mountain, Bull Run and Short Hill shared use trails;

k. Pedestrian and shared-use trails along other creeks;

l. A multi-use trail along the Berlin Turnpike through the Town of Lovettsville and connecting the W&OD and C&O trails;

m. Networks of sidewalks and multi-use trails in each of the Towns.

4. The County will seek through public purchase, proffer, density transfer, donation or open-space easement, the preservation of greenways and the development of trails. Priorities for acquisition and/or development are:

a. The extension of the W&OD Trail from its present terminus in Purcellville to its proposed terminus in Bluemont with a foot path extending from Bluemont to the Appalachian Trail;

b. A connector between the W&OD Trail and Whites Ferry;

c. A Short Hill Trail;

d. The development of the Potomac Heritage Trail (hiking from Fairfax to Harpers Ferry, WV);

e. The development of Blue Ridge, Catoctin Mountain and Bull Run Trails;

f. The development of pedestrian trails along other creeks;

g. The former Manassas Gap Railroad right of way and preserving or developing this corridor as a linear park and trail possibly linking it to the W&OD Trail, or incorporating into a trail network as depicted in the Green Infrastructure Map and Greenways and Trails Plan;

h. Cascades community to Claude Moore Park to the W&OD Trail; and

i. Connect Franklin Park to Round Hill and to Purcellville.

B. Parks and Recreation

Regional and county parks are important man-made open space assets of the Green Infrastructure that not only serve their passive and active recreational purposes, but also provide a link between communities and other Green Infrastructure elements. Individual parks and recreational assets are discussed in the Suburban, Rural and Transition Policy Area chapters, while the administrative aspects of the County's parks are addressed in Chapter Three.

Parks and Recreation Policy

1. The County will apply conservation design techniques in the design of new parks and athletic facilities and will locate them to provide links between public facilities and communities, to protect environmental integrity, and to provide buffers between different land uses.

C. Public School Sites

Public schools provide extensive open space in Loudoun's communities. These facilities are used not only for their primary educational purpose, but are also community assets and the focal point for active recreation and after-school programs that benefit the public at-large. Therefore, like parks and recreational facilities, the County recognizes that public school sites should be linked with other elements of the Green Infrastructure and connected through trails and greenways.

General policies for public schools are presented in Chapter Three.

D. Open Space Easements

A number of open space easements can be found throughout the County. (Refer to the Green Infrastructure Map, pg. 5-3) Many complement and protect natural features like rivers and streams, others protect historic locations or key agricultural areas, while others provide recreational and educational opportunities in the form of parks and nature preserves. The County will continue to encourage the use of open space easements as a way to complement and enhance the Green Infrastructure and its elements.

Group Four: Complementary Elements

Group Four includes elements that are not directly a part of the land-based Green Infrastructure but instead, complement it. They include air quality, lighting and the night sky, and the aural environment. These elements are predominantly in private ownership, although some public ownership applies for the airspace that is managed by the Metropolitan Washington Airport Authority (MWAA).

A. Air Quality

Loudoun County's air quality is threatened by air pollution from automobile and aircraft emissions, heating furnaces, and power plants. More efficient and better planned transportation and pedestrian networks, tree preservation and planting, reforestation and preservation of natural landscapes will help minimize the threat to the County's air quality.

In order to meet the federal goals of the Clean Air Act, the County offers an integrated land use approach that protects air quality by planning development in locations that are close to major transportation facilities and transit nodes, reducing the densities in the Rural Policy Area, and promoting and implementing alternative modes of transportation. The policies and guidelines of the *Revised Countywide Transportation Plan* also support this approach.

Air Quality Policies

1. The County will develop land use and transportation policies and measures that tend to reduce single occupancy vehicular trips, vehicle miles traveled, and associated emissions in order to improve air quality. Such measures will support the creation of pedestrian and bicycle facilities, park-and-ride lots, and mass transit options.

2. The County will promote tree planting and preservation as a means to improve air quality.

3. The County will enforce the Virginia State Law (9VAC5-40-5630) prohibiting open burning during an alert, warning, or emergency stage of an air pollution episode as described in Virginia State Law (9 VAC5-

70-10 et seq.).

4. The County will comply with the requirements of the Federal Clean Air Act Amendments of 1990 through support of the State Implementation Plan (SIP).

5. Loudoun County acknowledges its location in the Washington, D.C.-MD-VA Non-attainment Area. The County will continue to play an active role on the Metropolitan Washington Air Quality Committee (MWAQC) and the National Capital Region Transportation Planning Board (TPB) and will do its part in the implementation of the Phase II Attainment Plan for the Washington Metropolitan Nonattainment Area, as well as future emissions reduction programs.

6. The County recognizes that the deposition of air pollutants onto the waters of the Chesapeake Bay and the lands of the watershed are a threat to the restoration of the Bay and will pursue measures to reduce the generation of airborne pollution.

B. Lighting and the Night Sky

The beauty of the County's night sky is threatened by excessive and improper lighting. Artificial lighting is intended to be minimized and light pollution reduced while maintaining the primary purpose of lighting for public safety and visibility. The County will develop appropriate regulations and performance standards to promote quality and energy-efficient lighting that will also preserve the natural beauty of the night skies. Application of sound night-lighting standards will reduce light pollution such as glare, energy waste, light trespass, and the deterioration of the natural nighttime environment.

Lighting and Night Sky Policies

1. The County will adopt a lighting ordinance to achieve the following:

    a. Promote the use of lighting for convenience and safety without the nuisance associated with light pollution.

    b. Promote a glare-free environment through proper lighting performance standards to improve visibility and enhance public safety.

    c. Promote appropriate lighting standards to conserve energy.

    d. Develop appropriate lighting standards to prohibit unnecessary and intrusive light trespass that detracts from the beauty and view of the night sky.

C. Aural Environment

Loudoun County's efforts to protect existing and future residents from increased levels of environmental noise have focused primarily on airport noise surrounding Washington Dulles International Airport and Leesburg Executive Airport. In order to ensure a high-quality environment for both existing and future residents, as well as maintaining the economic viability of these important transportation and economic development resources, an Airport Noise Impact Overlay District was established to impose development restrictions within specified areas.

Public notification of airport impacts on a residential community is required for areas within one mile of the Ldn 60 noise contour. In addition to the notification provision, properties located within the Ldn 60 to 65 range are required to provide acoustical treatment of structures and to grant avigation easements. (Refer to Airport Ldn Contours Map, pg. 5-43)

Loudoun County also has many employment and activity centers that create various levels of noise and require consideration and, in some cases, abatement to meet public welfare and health objectives. The County will strengthen policies regulating noise produced by large-scale construction projects (e.g., use of explosives should be limited by operating hours and/or decibel levels).

The County recognizes that quarries are valuable employment and economic development resources for the County. As such, the Zoning Ordinance provides a Quarry Notification Overlay District that requires notification to residential property owners about the potential noise levels generated by neighboring quarry operations. The ordinance also sets performance standards to limit quarries' hours of operation.

It is also important to protect residential communities near or adjacent to major collector roadways. This is accomplished through the use of passive noise abatement measures such as adequate setbacks, earthen berms, wooden fences, and dense tree vegetation. The County discourages the use of structural noise abatement measures such as concrete walls unless supplemented with appropriate landscaping to enhance the aesthetics of such structures. Abatement barriers should reflect the character of the surrounding natural environment.

To protect residents adjacent to major highways, the County will also require appropriate noise mitigation measures to be incorporated into the overall project design for proposed noise-sensitive development when the absolute values in the Noise Abatement Criteria (NAC) Hourly A-Weighted Sound Levels table are approached or exceeded (see pg. 5-45).

Noise Abatement Criteria (NAC) Hourly A-Weighted Sound Levels

Activity Category	dB(A) Leq (h)	Description of Activity Category
A	57 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residential yards, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (exterior)	Commercial uses or developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands
E	52 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Airport Noise Policies

1. The County will continue to support the economic viability of Washington Dulles International and Leesburg Executive Airports by continued and complete prohibition of new residential and other noise sensitive land uses from the areas defined by the projected Ldn 65 and greater noise contours for both airports and by requiring non-noise sensitive land uses within these noise impact areas.

2. The County will work with the Metropolitan Washington Airports Authority and the Town of Leesburg to analyze long-term airport noise potential using the Integrated Noise Model in order to project aircraft noise contours based upon assumptions about aircraft fleet mix, generalized flight tracks, and other operating procedures around Washington Dulles International and Leesburg Executive Airports for use in noise abatement policy formulation.

3. The County will continue to work with the Metropolitan Washington Airports Authority to refine airport operations and routes at Washington Dulles International Airport to minimize the effects of noise on

multiple and single family lots, schools, and churches, public parks and recreational open space.

4. For the environs of Washington Dulles International Airport, the County will base its Aircraft Noise Compatibility planning efforts upon the map entitled, Noise Exposure Map: Potential with a Preferential Runway Use, Ldn 60 and 65, dated August, 1992, and prepared by KPMG Peat, Marwick for the Metropolitan Washington Airports Authority (MWAA). For the environs of Leesburg Executive Airport, the County will base its Aircraft Noise Compatibility planning efforts upon the Environmental Assessment Report, Leesburg's Godfrey Field, Leesburg, Virginia, dated October, 1985, and prepared by Campbell, McQueen and Paris, Engineers of the Town of Leesburg.

5. An Airport Noise and Overflight Impact Area (ANOIA) is established as part of this Plan and consists of three (3) policy areas: (i) areas outside of, but within one mile of the Ldn 60; (ii) areas between the Ldn 60-65 aircraft noise contour; and (iii) areas within the Ldn 65 or greater noise contour.

6. For areas outside of, but within one (1) mile of the Ldn 60 contour, the County will require:

    a. Full Disclosure Statement – For all new residential dwelling units to be constructed outside of, but within one (1) mile of the Ldn 60 contour. The applicant will disclose in writing to all prospective purchasers that they are located within an area that will be impacted by aircraft overflights and aircraft noise. Such notification will be accomplished by inclusion of this information in all sales contracts, brochures, and promotional documents, including the Illustrative Site Plan(s) on display within any sales related office (s), as well as in homeowners' association documents, and by inclusion on all subdivision and site plans, and within all Deeds of conveyance.

7. For areas between the Ldn 60-65 aircraft noise contours, the County will require:

    a. Full Disclosure Statement – For all new residential dwelling units to be constructed between the Ldn 60-65 aircraft noise contours. The applicant will disclose in writing to all prospective purchasers that they are located within an area that will be impacted by aircraft overflights and aircraft noise. Such notification will be accomplished by inclusion of this information in all sales contracts, brochures, and promotional documents, including the Illustrative Site Plan(s) on display within any sales related office (s), as well as in homeowners' association documents, and by inclusion on all subdivision and site plans, and within all Deeds of conveyance.

    b. Acoustical Treatment – For all new residential units located between the Ldn 60-65 aircraft noise contours. The applicant will incorporate acoustical treatment into all dwelling units to insure that interior noise levels within living spaces (not including garages, sunrooms, or porches) do not exceed a sound level of 45 db(A).

    c. Avigation Easements – For all new residential dwelling units to be constructed between the Ldn 60-65 aircraft noise contours. Prior to or in conjunction with the approval of a rezoning application, the applicant of a parcel or parcels contained within the Ldn 60-65 aircraft noise impact area associated with Washington Dulles International Airport, should proffer the dedication of avigation easements to the Metropolitan Washington Airports Authority, indicating the right of flights to pass over the property, as a means to securing the long-term economic viability of Washington Dulles International Airport.

8. For areas exposed to aircraft noise of greater than Ldn 65, the County prohibits the construction of new residential or other types of noise sensitive uses within those areas of Ldn 65 or greater.

9. The County will continue to enforce and update, as appropriate, the Airport Noise Impact Overlay District included as part of the Loudoun County Zoning Ordinance. Such district regulates land uses and provides acoustical architectural performance standards for construction which occurs within this area.

Highway Noise Policies

1. The County will require that all land development applications that propose land uses adjacent to any of the existing and/or proposed arterial and major collector roads will be designed to ensure that no residential or other type(s) of noise-sensitive use(s) will have traffic noise impacts which occur when the predicted traffic noise levels approach or exceed the noise abatement criteria on the Noise Abatement Criteria (NAC) Hourly A-weighted Sound Levels table, or when predicted traffic noise levels substantially exceed existing noise levels. To determine the predicted highway noise levels and to assess noise impacts at a particular location, a land development applicant will be required to use the latest version of the Federal Highway Administration's Highway Traffic Noise Prediction Model (FHWA-RD-77-108, as amended). The design year noise level will be understood to be the probable traffic volume for said facilities at a time of ten to twenty years from the start of construction.

   For the purposes of these procedures, the design-year noise levels will be applied to:

   a. Areas that are regularly used by people and in which a lowered noise level would be beneficial. Such areas would not normally include service stations, junkyards, industrial areas, parking lots, storage yards, or the unused open-space portions of other developments and facilities. Design-year noise levels will, however, be applied to the gardens and yards of residential areas and those parks and recreation areas (i.e., open air amphitheaters, golf courses, etc.) or portions thereof where serenity and quiet are considered essential, even though such areas may not be subject to frequent human use; and

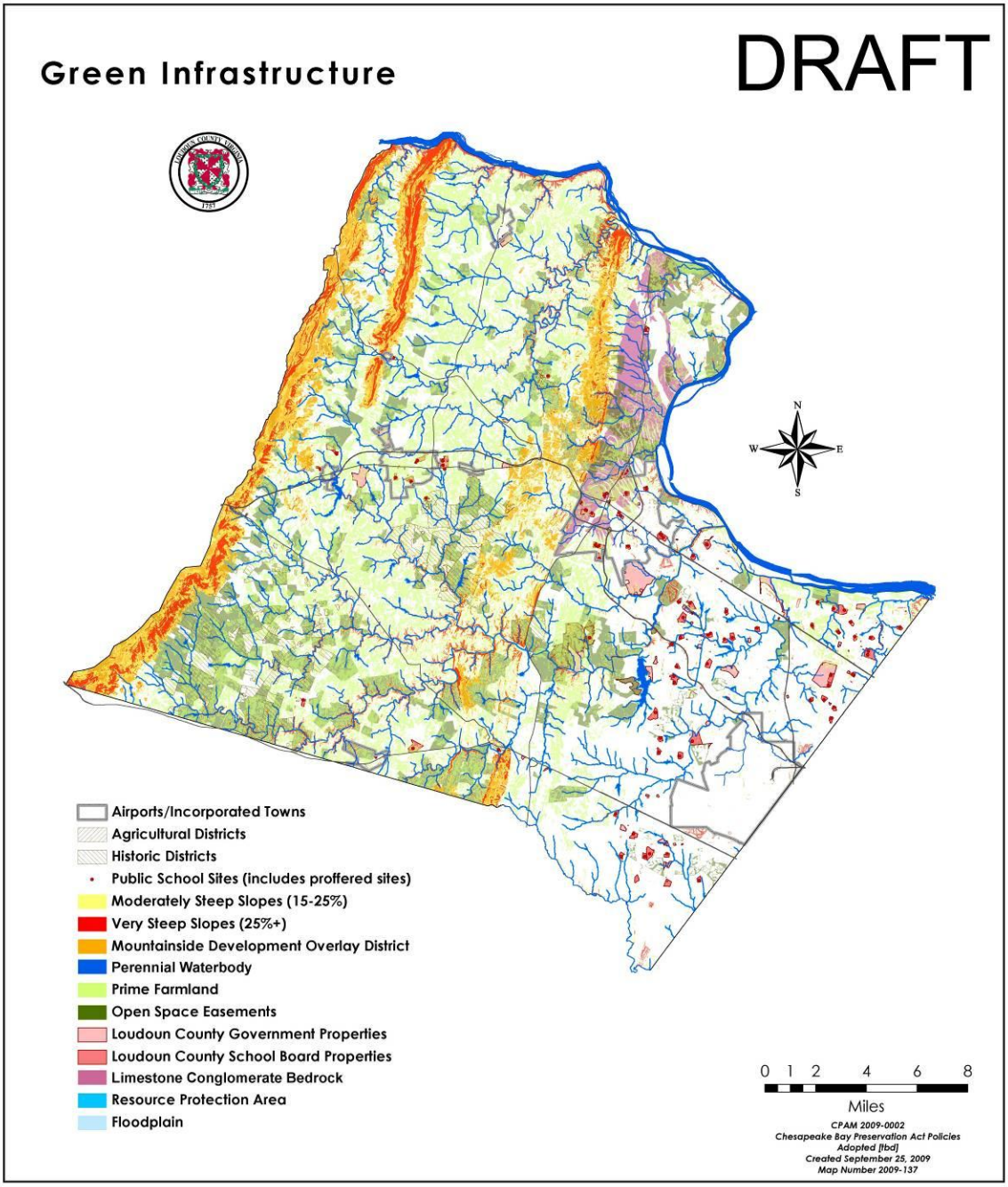
   b. Those places at approximately ear-level height. The values do not apply to an entire tract upon which an activity is based, but only to that portion on which such activity normally occurs.

2. Those proposed land development applications that are determined to approach or exceed the noise abatement criteria on the Noise Abatement Criteria (NAC) Hourly A-weighted Sound Levels table will provide noise protection through the use of passive noise abatement measures such as adequate setbacks, earthen berms, wooden fences, and dense tree vegetation. The County discourages the use of structural noise abatement measures such as concrete walls unless the noise abatement criteria cannot be met. Noise walls should include design elements such as articulated walls and gradual descents that blend with natural features. Walls should be supplemented with appropriate landscaping and reflect the character of the surrounding natural environment.

3. The County will use noise policies in the *Revised Countywide Transportation Plan* to further outline noise avoidance and mitigation requirements for residential uses, parks, recreational facilities, as well as public and quasi-public or other noise-sensitive land uses along arterial and major collector roads.

Construction Blasting Policy

1. The County will require developers using explosives within 500 feet of a structure to do a pre-and post-blast survey to determine if any damage was done to nearby homes. The survey should include the impact on wells and drainfields, if applicable.


Green Infrastructure
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Airports/Incorporated Towns
Agricultural Districts
Historic Districts
Public School Sites (includes proffered sites)
Moderately Steep Slopes (15-25%)
Very Steep Slopes (25%+)
Mountainside Development Overlay District
Perennial Waterbody
Prime Farmland
Open Space Easements
Loudoun County Government Properties
Loudoun County School Board Properties
Limestone Conglomerate Bedrock
Resource Protection Area
Floodplain
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Chesapeake Bay Preservation Act Policies
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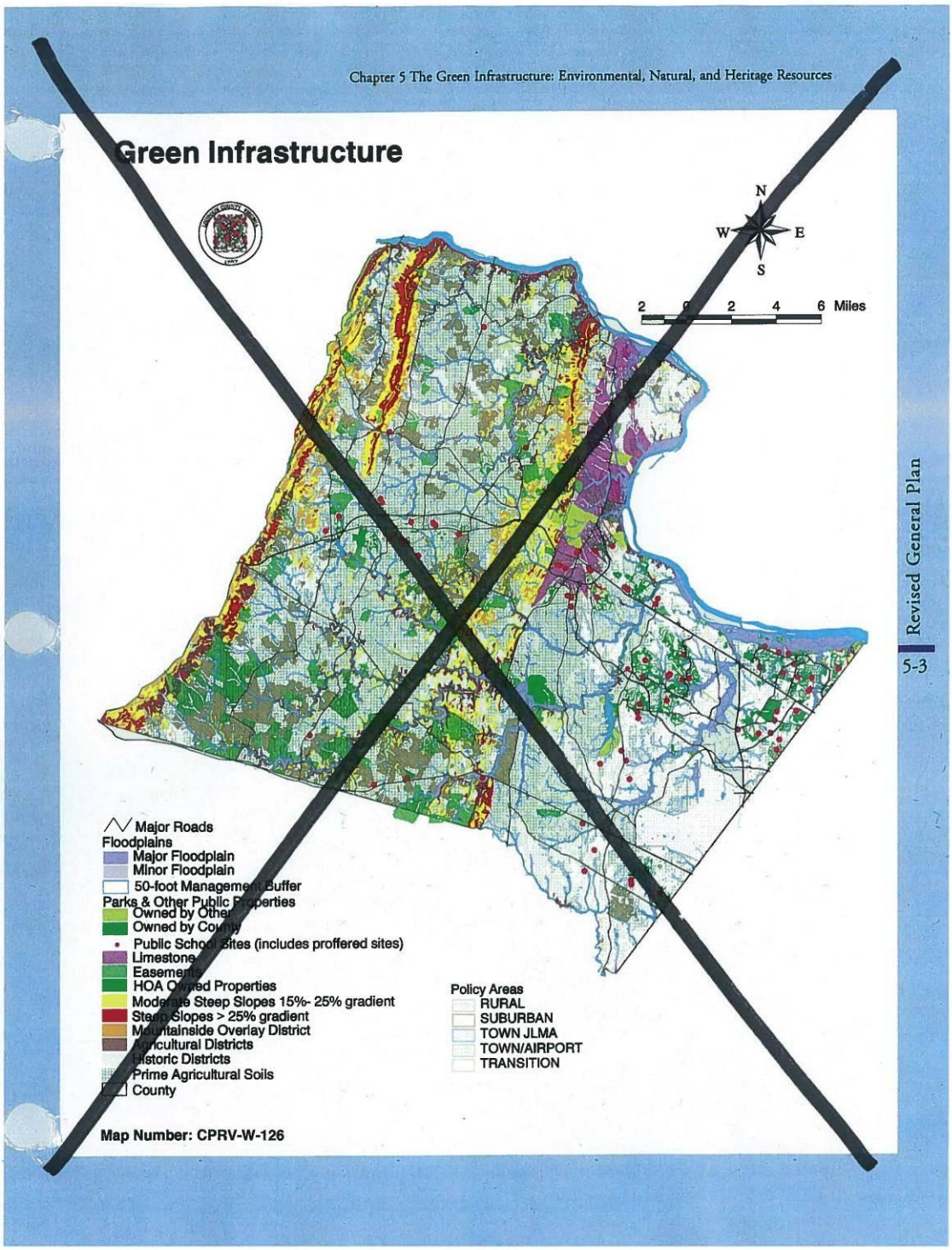
Created September 25, 2009
Map Number 2009-137


Chapter 5 The Green Infrastructure: Environmental, Natural, and Heritage Resources
Green Infrastructure
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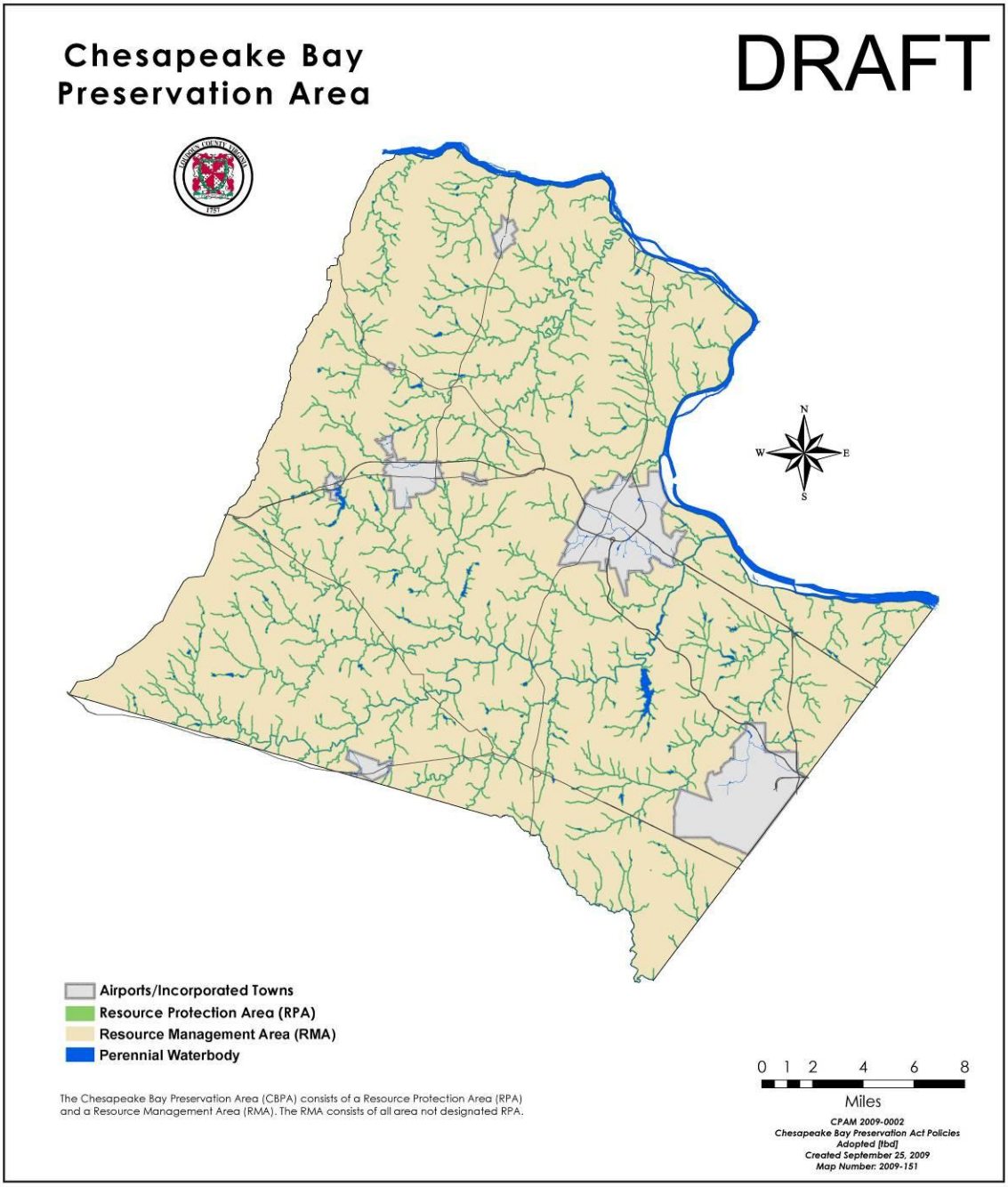
2 0 2 4 6 Miles
Major Roads
Floodplains
Major Floodplain
Minor Floodplain
50-foot Management Buffer
Parks & Other Public Properties
Owned by Other
Owned by County
Public School Sites (includes proffered sites)
Limestone
Easements
HOA Owned Properties
Moderate Steep Slopes 15%- 25% gradient
Steep Slopes > 25% gradient
Mountainside Overlay District
Agricultural Districts
Historic Districts
Prime Agricultural Soils
County
Policy Areas
RURAL
SUBURBAN
TOWN JLMA
TOWN/AIRPORT
TRANSITION
Map Number: CPRV-W-126
Revised General Plan
5-3


Chesapeake Bay
Preservation Area
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Airports/Incorporated Towns
Resource Protection Area (RPA)
Resource Management Area (RMA)
Perennial Waterbody
The Chesapeake Bay Preservation Area (CBPA) consists of a Resource Protection Area (RPA) and a Resource Management Area (RMA). The RMA consists of all area not designated RPA.
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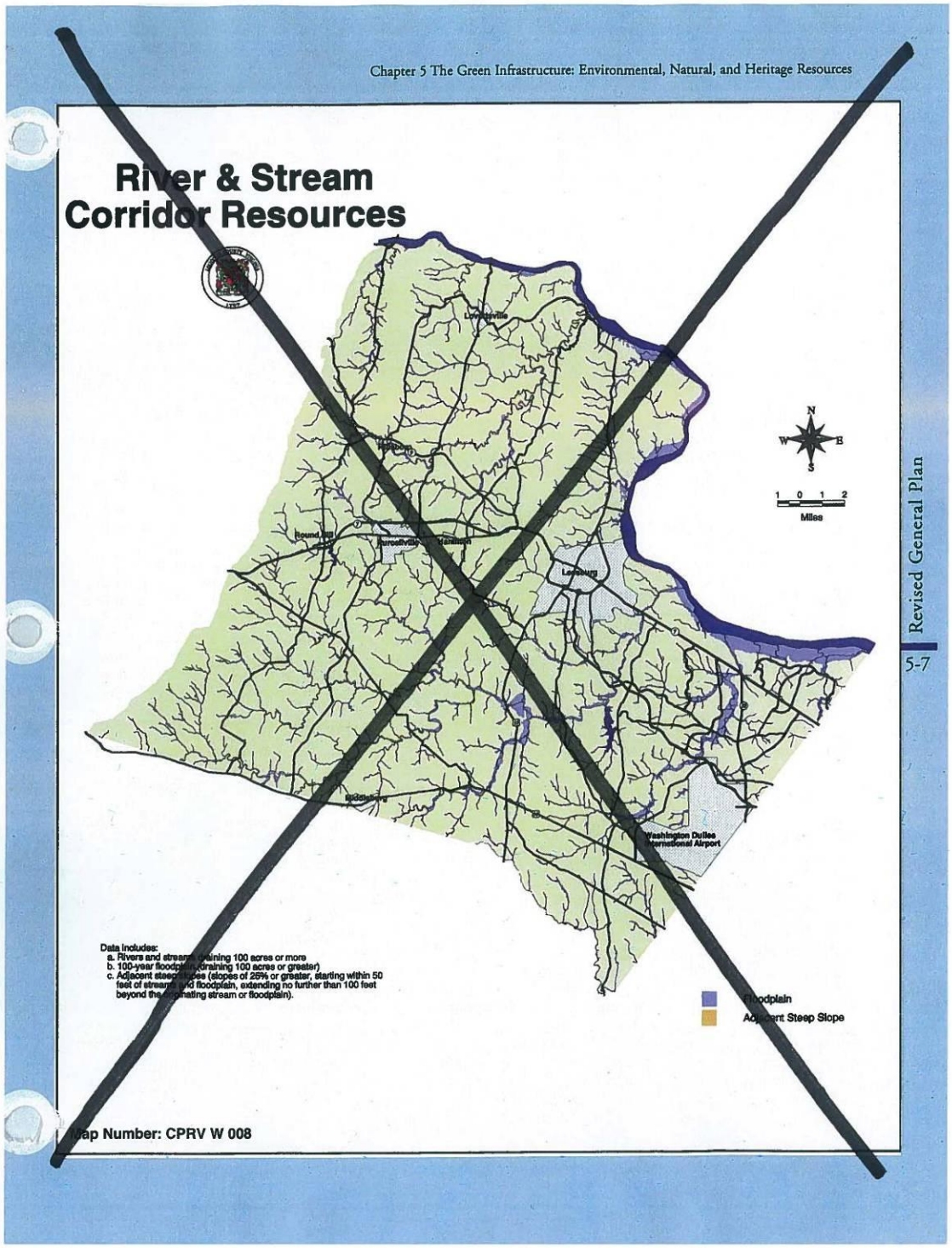
Miles
CPAM 2009-0002
Chesapeake Bay Preservation Act Policies
Adopted [tbd]
Created September 25, 2009
Map Number: 2009-151


Chapter 5 The Green Infrastructure: Environmental, Natural, and Heritage Resources
River & Stream Corridor Resources
Leesburg
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Data includes:
a. Rivers and streams draining 100 acres or more
b. 100-year floodplain (draining 100 acres or greater)
c. Adjacent steep slopes (slopes of 25% or greater, starting within 50 feet of stream and floodplain, extending no further than 100 feet beyond the adjacent stream or floodplain).
Floodplain
Adjacent Steep Slope
Map Number: CPRV W 008
Revised General Plan
5-7

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Chapter 6
Suburban Policy Area

Open Space Policies

1. In Residential Areas, a mix of open space will be provided. This mix will include active and passive and/or natural open space areas as appropriate to the scale and location of the site. Types of active recreation open space include ball fields, tennis or basketball courts, swimming pools, tot lots, golf courses, dog parks, and other areas for recreational sports or games. Types of passive open space include trails (hiking, biking, walking, or equestrian), picnic, camping, hunting, or fishing areas. Natural open space is land left in a mostly undeveloped state including forests, meadows, hedgerows, and wetlands.

2. Business and Industrial land use areas will provide open space of the following types: open space in its "natural" state, such as forests, wetlands, or meadows; trails and trail connections; water features or amenities. The placement of certain active recreational facilities such as lighted ball fields in Business and Industrial land use areas will be encouraged. Business and Industrial land use areas will provide public and civic space of the following types: plazas, public art, entrance features. The required open space and public & civic space will conform to the percentages required for each category of suburban area development as established in the relevant matrix.

3. Interior open space will account for at least 75 percent of the required open space in residential areas. Thus, neither the required buffer areas nor "leftover spaces" and parking and street landscaping can account for more than 25 percent of the open space requirement.

4. All dwelling units will have an open space area (active, passive, or natural) located within 1,500 feet.

5. All active recreation open space will be readily accessible to pedestrians and cyclists by sidewalk, path, trail, and/or bike lane.

6. Fifty percent (50%) of the open space requirement may be satisfied by RPA and floodplain ~~the~~ areas ~~of River and Stream Corridor Overlay District (RSCOD)~~.

7. The entire area of river and stream corridor resources ~~the RSCOD~~ on a given parcel will be protected in accordance with River and Stream Corridor ~~Resource~~ policies, regardless of the amount applied to the open space requirement of the land use mix.

8. Residential developments in the Suburban Policy Area must have 30 percent of the land designated as open space. Up to 50 percent of the required open space, excluding the RPA and floodplain ~~RSCOD~~, may be obtained offsite within the same suburban community. Offsite open space can include priority open space areas, green-belts, and components of the Ggreen Iinfrastructure.

9. Areas included on the following list will fulfill the open-space ratio requirement of the land use mix defined for residential communities:

    a. Community parks that are at least three acres in size;

    b. Neighborhood parks that are at least 20,000 square feet in size;

c. Pocket parks, landscaped gardens, and greens that are at least 2,500 square feet in size;

d. Linear path systems that connect to off-site path systems. Multi-modal path systems will conform to American Association of State Highway and Transportation Officials (AASHTO) standards;

e. Required perimeter buffers (not to comprise more than 25 percent of the open space);

f. Community gardens at least 2,500 square feet in size;

g. Tot lots that are a minimum of 5,000 square feet in size; and

h. The RPA and floodplains ~~The RSCOD~~ that do~~es~~ not comprise more than 50 percent of the required open space in a community;

i. Equestrian trails;

j. Water features such as ponds and lakes that are wet year-round. Storm water management facilities will not be included unless they are developed as year-round amenities. (e.g., with gazebos, picnic areas, or walking paths added).

10. No buffer standard reductions will be permitted without substitution for other open space on an acre-to-acre basis.

11. Development will be clustered away from the Beaverdam and Goose Creek reservoirs to help establish the primary greenbelt area and to help create a contiguous network of open space as part of the Green Infrastructure.

12. The County will support and encourage private contractual exchanges of density within each of the four Suburban Communities to assist with the development of open space.

13. Density transfer, both by voluntary action and through the Open Space Preservation Program will be promoted within each of the four communities. All residential rezonings will be considered for voluntary participation in an open space preservation program.

Residential Neighborhoods Policies

1. New Residential Neighborhoods will develop at densities up to 4.0 dwelling units per acre, depending on the availability of adequate roads, utilities, and the provision of a full complement of public services and facilities.

2. The land use mix (measured as a percentage of the land area) in a Residential Neighborhood generally will comply with the following ratios:

Land Use Category*	Minimum Required	Maximum Permitted
a. Residential	30%	60%
b. Office & Light Industrial	0%	20%
c. Public & Civic	10%	No Maximum
d. Public Parks & Open Space	30%	No Maximum

* Retail Policy guidance provided in *Countywide Retail Plan*

3. Residential Neighborhoods will incorporate fully open space at a minimum of 30 percent of the gross acreage of the property. In both residential areas, no more than 50 percent of the required open space may be located in river and stream corridors ~~the RSCOD~~.

4. Residential Neighborhoods will exhibit the following design characteristics desired by the County:

   a. Compact site layout to reduce trips within the neighborhood, facilitate alternative forms of transportation, preserve the Green Infrastructure, and result in reduced transportation and utilities infrastructure costs;

   b. Pedestrian-scale streetscape including such features as street trees, sidewalks along all street frontage, and street lighting;

   c. A predominantly interconnected street pattern with inter-parcel connections;

   d. A combination of neighborhood parks, squares, and greens located throughout the neighbor-hood within 1500 feet of all residences, and a formal civic square or other public space located in conjunction with a civic facility, Neighbor-hood Center, or other use, to create a focal point for the community;

   e. The location of public and civic uses such as churches and community centers in prominent sites to act as landmarks within the neighborhood;

   f. Off-street parking lots located to the rear of civic and business uses to ensure the building is the prominent sight from the street;

   g. On-street parking that may be credited toward meeting residential parking requirements; and

   h. A variety of lot sizes.

Transit-Oriented Development (TOD) Policies

1. The location for TOD will be determined when a proposal for the development of a TOD complies with the policies of this Plan and meets these seven criteria:

   a. The location provides road access with adequate capacity and a network that supports bus transit to the transit stop located at the center of the TOD ensuring timely, efficient transit service.

   b. The location is between interchanges, so that the intensity of the TOD is supported by two inter-changes, and so that auto-oriented land uses are conveniently separated from transit-oriented land uses. When rail serves the TOD, the rail can either leave the median of the Dulles Greenway or remain in the median and not be hampered by the configuration of the road network. Dulles Greenway interchanges should not be congested by the high-density land uses planned for the TOD.

   c. There is sufficient land area to support the development needed to sustain bus and rail transit and the size meets the TOD size policies included in the Plan.

   d. The location has minimal environmental constraints, such as river and stream corridor resources ~~RSCOD~~ and steep slopes.

   e. The location will not negatively affect established neighborhoods by promoting through-traffic and other such intrusions to the neighborhood.

f. The location can clearly provide a transit opportunity that can be engineered to serve the TOD, including accommodating rail in the median of the Dulles Greenway.

g. The location does not harm the planned regional road network or planned regional transit facilities.

2. The TOD will be located between the Route 607 and Route 772 interchanges.

3. TODs will be located between the Dulles Greenway interchanges. TOD edges will be located no closer than 1,500 feet from the center point of an interchange.

4. The preferred location for a TOD is completely on the south side of the Dulles Greenway. If the transit facility is located in the median of the Dulles Greenway, the TOD can extend to both sides of the Dulles Greenway.

5. The land use mix (measured as a percentage of the gross land area) in a TOD will generally comply with the following ratios:

Land Use Category*	Minimum Required	Maximum Permitted
a. Residential	20%	50%
b. Regional Office	20%	50%
c. Commercial Retail & Services	10%	30%
d. Public Parks, Civic & Open Space	15%	No Maximum

* Retail Policy guidance provided in *Countywide Retail Plan*

6. The TOD will contain a mix of uses including residential uses as well as two or more significant tax-producing land uses that are mutually supporting.

7. The County will encourage the development of a mix of housing types, densities, and building types in the TOD.

8. The TOD will consist of a commercial core, an outer core. The commercial core will extend to 1/4-mile from the transit stop. The outer core will extend from 1/4-mile to 1/2-mile out from the transit stop. In addition, there will be a transit supportive area surrounding the TOD. It will extend from the outer core edge (1/2-mile) to one mile from the transit stop.

9. Transit stops will be located in the commercial core. The preferred location of the transit stop is at least 1/2-mile off of the Dulles Greenway to maximize the TOD development within a 1/2-mile radius; however, if upon further study, cost, engineering, and/or design characteristics prohibit the transit stop from leaving the Dulles Greenway median, the transit stop could be within the median and the TOD could extend to either or both sides of the Dulles Greenway.

10. The TOD will provide pedestrian-scale development with a mix of high-density residential, commercial, public, personal services, and employment uses. Pedestrian circulation will be enhanced by short blocks arranged in a rectilinear grid-street pattern. The TOD will have an "urban feel" with pedestrian-oriented building facades, ground-floor shops, and streets culminating in distinctive public spaces.

11. TOD land uses should include convenience retail uses and civic uses, such as public plazas, libraries, day care, and postal services. The commercial core will contain the highest land use intensities in the Dulles Greenway corridor. Use intensities will step down from the commercial core to the outer core to the

transit supportive area.

12. The TOD land use intensity will be phased as alternative modes of transit are available. Use intensities may increase as the specified mode of transit is planned, scheduled, designed, and funded to serve the TOD. The following density increments may be achieved:

    a. The density for the TOD when served only by roads is up to 16 dwelling units per acre for residential development and up to 0.6 FAR for non-residential development contingent upon the availability of utilities, pedestrian and bicycle travelways, public facilities, and conformance to the community-design and growth-management policies of the *Revised General Plan*.

    b. When bus service and facilities are planned, scheduled, designed and fully funded to serve the TOD, residential densities may increase above 16 dwelling units per acre up to 32 dwelling units per acre and a non-residential FAR above 0.6 up to 1.0, contingent upon the availability of utilities, pedestrian and bicycle travelways, public facilities, and conformance to the community-design and growth-management policies of the *Revised General Plan*.

    c. When rail transit and facilities are planned, scheduled, designed, and fully funded to serve the TOD, residential densities can increase above 32 dwelling units per acre up to 50 dwelling units per acre and a non-residential FAR above 1.0 to 2.0.

13. A vertical mix of uses is encouraged in multi-story buildings in the commercial core, such as ground floor retail with upper story residences or offices. When a vertical mix of uses is provided, the land use matrix will be more flexible to accommodate this type of development.

14. The provision of an urban deck is encouraged in the design of the transit station and TOD if the transit station is located in the median of the Dulles Greenway to ensure an appealing convenient pedestrian environment and convenient access to the TOD land uses.

15. The transit supportive area will consist of the land located between approximately 1/2-mile and one mile from the transit stop.

16. The transit supportive area is meant to provide a transitional and complementary area between the high-density core and the surrounding development pattern outside of the TOD.

17. Transit-supportive areas should provide a mix of land uses that complement and support TOD land uses. Commercial uses within the transit supportive area should not compete with the major retail, office, and service commercial in the Commercial Core of the TOD.

18. The transit-supportive area street network should complement and support the TOD area street network by providing multiple and direct vehicular, bicycle, and pedestrian connections to the transit station.

19. Transit supportive areas will be developed to reflect their underlying land use designations. Business land use areas will be permitted to develop to a maximum density of 24.0 dwelling units per acre depending on the availability of bus service to the nearby TOD core. Higher density residential or mixed-use areas should be clustered in pockets along transit corridors to support feeder bus travel.

20. The County may consider an additional TOD west of the Route 772 interchange in the event the Dulles Corridor Bus Rapid Transit/Rail Project is planned to extend beyond the Route 772 Interchange.

Transit-Related Employment Center (TREC) Policies

1. The TREC will be located to the north and west of the Dulles Greenway and the Route 606 interchange. This area, encumbered by the regional park and ride facility, river and stream corridor resources ~~the RSCOD~~, Route 606, Route 789, and the 65 Ldn cannot be developed as a TOD.

2. The TREC will be located entirely on the north side of the Dulles Greenway north of the Dulles Airport property, no further than 1/2-mile from the transit stop.

3. The location for the TREC will be determined when a proposal for the development of a TREC complies with the policies of this Plan and meets these six criteria:

   a. The location provides road access with adequate capacity and a network that supports bus transit to the transit stop located south of the TREC ensuring timely, efficient transit service.

   b. The location will provide road improvements such that the auto-oriented land uses are conveniently separated from transit-oriented land uses. When rail serves the TREC, the rail will not be hampered by the configuration of the road network. Dulles Greenway interchanges should not be congested by the high-intensity land uses planned for the TREC.

   c. The location will not negatively affect established neighborhoods by promoting through-traffic and other such intrusions to the neighborhood.

   d. The location can clearly provide a transit opportunity that can be engineered to serve the TREC, including accommodating rail in the median of the Dulles Greenway and safe and convenient access to the transit station.

   e. Because of the planned land use intensity, the location does not harm the planned regional road network or planned regional transit facilities.

4. The land use mix (measured as a percentage of the gross land area) in a TREC will generally comply with the following ratios:

Land Use Category*	Minimum Required	Maximum Permitted
a. Regional Office	25%	75%
b. Light Industrial	0%	20%
c. Special Activity Uses	0%	50%
d. Commercial Retail & Services	10%	30%
e. Public Parks, Civic & Open Space	15%	No Maximum

* Retail Policy guidance provided in *Countywide Retail Plan*

5. The County will encourage the cooperation of all landowners in the development of the TREC to ensure conformance with the TREC concept set forth in the *Revised General Plan*.

6. The TREC land use intensity will be phased as alternative modes of transit are available. Use intensities may increase as the specified mode of transit is planned, scheduled, designed, and funded to serve the TREC. The following density increments may be achieved:

   a. The density for the TREC when served only by roads is up to 0.6 FAR for non-residential development contingent upon the availability of utilities, pedestrian and bicycle travelways, public

facilities, and conformance to the community-design and growth-management policies of the *Revised General Plan*.

b. When bus service and facilities are planned, scheduled, designed and fully funded to serve the TREC, non-residential FAR above 0.6 up to 1.0, contingent upon the availability of utilities, pedestrian and bicycle travelways, public facilities, and conformance to the community-design and growth-management policies of the *Revised General Plan*.

c. When rail transit and facilities are planned, scheduled, designed, and fully funded to serve the TREC, non-residential FAR above 1.0 to 2.0.

7. To reach the allowable net FAR of 2.0 in the TREC, an applicant will ensure that travel to existing transportation facilities is not encumbered, including pro-viding necessary regional roadway improvements such that access to Dulles Airport, the Dulles North Transit Center, or the transit station are not negatively impacted. Roadway improvements include maintaining an acceptable level of service for Routes 789, 606, and 607.

8. The County may consider the development of FAR above 0.4 north of the Greenway and west of the Broad Run if the applicant demonstrates the following:

a. Loudoun County Parkway, Shellhorn Road, Route 789, Route 606, and the Dulles Greenway can continue to function at acceptable levels.

b. Negative impacts to river and stream corridor resources are ~~the RSCOD is~~ minimized.

c. Access to the Dulles North Transit Center is not hampered.

d. A unified development plan is provided that establishes clear pedestrian and transit linkages between the areas east and west of the Broad Run.

e. Adequate, safe, and logical pedestrian connections can be made from the land uses on the west side of the Broad Run to access the transit stop east of Broad Run.

If all of these criteria cannot be met, the area north of the Greenway and west of the Broad Run will be developed under the Keynote Employment policies of this Plan.

9. The highest land use intensities in the TREC will be closest to the transit station, and use intensities will step down as uses radiate to the outer edge of the TREC.

10. The County will work with the Metropolitan Washington Airports Authority to encourage use of Dulles Airport property for the rail maintenance and storage yard.

6. Parking

In the past, the size, location, and configuration of parking lots has sent a clear and simple message: "arrive by car only." By changing the standards for parking design, a friendlier environment for alternative forms of transportation, including walking and bicycling is created. The parking standards for Business land uses contained here reflect the County's emphasis on multi-modal transportation, mixed-use development, and environmental protection. Placing parking to the rear of buildings encourages pedestrians to approach because they are not traversing wide expanses of asphalt. Encouraging shared parking among businesses provides the same benefit. The benefits of on-street parking include traffic calming and protecting pedestrians from on-street traffic. Structured parking provides a high-quality look to business development and protects the

environment by limiting impervious cover and reducing stormwater run-off.

Suburban Parking Policies

1. The County discourages developments from providing additional impervious surface that exceeds the parking requirements of the Zoning Ordinance.

2. The County will continue its practice of reducing parking requirements for development within 1,500 feet of existing transit centers in order to encourage transit usage.

3. The County will reduce parking requirements when a development proposal includes Transportation Demand Management (TDM) strategies that can be demonstrated to reduce trip making to and from the development. Such strategies may include, but are not limited to carpool and vanpool coordination, parking incentive programs, transit subsidies and teleworking programs, and coordination with non-auto arrival modes, such as transit, bicycle, or pedestrian, when facilities for these modes are in place. Parking reductions in such instances will be commensurate with the demonstrated reduced demand for parking.

4. The County will encourage existing and new employment and business uses to support alternative travel modes by offering ridesharing and car/vanpooling, minimizing the availability of parking beyond current County requirements, and providing site amenities (e.g., transit shelters and bicycle lockers) as appropriate. Employers also should investigate other incentives (e.g., parking cashout programs and telework policies).

5. The County will provide incentives to encourage structured parking in all Business land use areas, especially Keynote Employment areas.

6. The Zoning Ordinance will continue to allow shared/reduced parking based upon the joint-use, time-of-day, or time-of-week needs of different uses.

7. Where possible, and in coordination with VDOT, the County will credit on-street parking adjacent to a commercial use toward meeting parking requirements.

8. The County encourages the use of pervious parking surfaces to promote infiltration and reduce nutrient and sediment loading into local waterways, where practicable ~~existing soil types and current technology will allow~~.

9. Where appropriate, parking lots will be placed to the rear of buildings.

10. Design guidelines will be established to facilitate adequate landscaping, berms, pedestrian access, and environmentally sound stormwater run-off.

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Chapter 7
Rural Policy Area

Land Use Pattern and Design Strategy Policies

1. The County values the rural character of the Rural Policy Area, formed by the elements of the Green Infrastructure and the working landscape, and will protect it by supporting and enhancing the rural economy through regulations in the land development ordinances.

2. The County recognizes that the vitality of the rural economy and the rural way of life require the protection and enhancement of the County's Green Infrastructure. The County will protect its natural and cultural-resource base (including stream corridors, wetlands, steep slopes, ridges, mountains, working landscapes, woodlands, historic and archaeological resources, habitats, greenways, trails, reservoirs and public facilities) in order to preserve the rural character of the land and the social and experiential aspects of the rural way of life.

3. The County will protect its land resources for farming, bio-agricultural industries, vineyards, Christmas trees, forestry, nurseries, fruit and specialty vegetable production, and other innovative agricultural uses that contribute to the rural economy, as part of an overall rural economy strategy by reducing substantially the County's development density, thereby increasing the investment potential and attractiveness of agricultural land for families and businesses.

4. The County will preserve agricultural land, natural resources, open space and historic landscapes through the implementation of the Purchase of Developments Rights Program, the Agricultural and Forestal District Program, conservation-design regulations and other land use programs.

5. The County will facilitate and promote programs that support the expansion of equine-related businesses, non-traditional businesses, and direct-market rural businesses such as orchards, vineyards, nurseries, flower farms, and commercial stables, that generate rural tourism and enhance the overall rural economy while preserving rural character.

6. The County supports the creation of a variety of opportunities for rural commercial, industrial, employment, and institutional activities that preserve rural character and that are compatible with the dominant rural land use pattern in the Rural Policy Area. Rural business uses will meet established performance criteria, including traffic capacity limits, employee limits, and groundwater and surface water protection, meet site design standards (i.e., buffering, use intensity, siting, architectural features) and pose no threat to public health, safety and welfare. Appropriate uses include bed-and-breakfast enterprises, country inns, rural retreats and resorts, private camps and parks, farm markets, wayside stands, small businesses, rural corporate retreats, small corporate office and training facilities, bio-tech research facilities, private schools or medical facilities, private conference centers, meeting facilities, and similar types of uses. Where possible, such uses should locate in existing historic and /or agricultural structures.

7. The County supports its "Right to Farm" policy to protect existing farms and farmers from nuisance complaints from neighboring rural residents. The County will develop zoning standards, other legislation, and educational programs designed to reduce potential conflicts arising from the proximity of agriculture

to residential development.

8. The County supports the Rural Policy Area as a permanent rural landscape, a unique composite of natural and man-made environments, farms and forestal areas, natural areas and wildlife habitats, villages, and hamlets. The County will permit development in the Rural Policy Area that promotes opportunities for the expansion of rural economic uses, open space, farms, historic and natural areas, forests, the Green Infrastructure, and protects the rural character of the landscape.

Rural Residential

For a decade, the County has counted on a variety of voluntary residential development options and incentives to entice desired development patterns rather than directing development into specific patterns to protect the agricultural industry, essential open space, natural environment, and the rural culture and character of the Rural Policy Area. However, the County has been relatively unsuccessful in achieving the desired development pattern.

The 1991 *General Plan* set rural residential priorities. Rural Villages and Hamlets that permitted clustered densities and required permanently protected open space, additions to Existing Rural Hamlets and Villages and large lot development (one dwelling unit per 25 acres) were cited as the preferred development patterns. Nevertheless, the uniform, 3-acre lot subdivision pattern and to a certain extent the 10-acre lot subdivision have remained the favored development choices in the rural area. The County has attempted to discourage these forms of development because they encourage rural sprawl and destroy rural character. This pattern consumes prime agricultural soils that are important to the rural economy, is costly to provide services to and often exceeds the design capacity of the rural road network. It also results in a proliferation of individual, on-site wells and septic systems that threaten groundwater and surface water quality.

The basic concept underpinning the County's strategy for the Rural Policy Area is to protect the land resource of the area for rural economy uses and to provide a balance of residential and non-residential uses that enhance a rural quality of life. Such uses require prime agricultural soils, protect open land and rural character; protect elements of the Green Infrastructure; maintain fiscal balance; and relieve the strain of rural residential development on rural road capacity and service delivery. To accomplish these goals, the County must limit the number of houses in the Rural Policy Area and direct new residential development, there and countywide, to locations that are consistent with County goals. A variety of residential development options exist within the Rural Policy Area, including conventional subdivision, spin-off lots, and rural clusters. The appropriateness of each development option will vary depending on site-specific characteristics such as parcel size, road access and location.

The County recognizes that rural residential living provides a high quality of life and responds to a substantial market niche. The County is also aware that rural land values are in part related to the development potential for housing and as such retaining acceptable land value has been considered in establishing rural residential policies. An appropriate balance has been set that adheres to the following objectives:

- Provide for a wide variety of land parcel sizes that will meet the needs of the rural economy and provide room for growth of rural residential neighborhoods.

- Encourage rural residential clustering and the use of communal water and wastewater systems. Analysis

has shown that clustered lots are equal in value to "grid" lots at the same density.[1]

- Require all rural residential development to incorporate existing Green Infrastructure elements into the design of the site.

The Plan provides two rural residential areas each with cluster options as described below:

1. The Southern Tier (defined generally as south of Goose Creek and North Fork of Goose Creek to the County border with Fauquier County and west of the Transition Policy Area).

   This area is characterized by an existing large lot pattern with a significant number of land parcels already under easement. It is the center of Loudoun's equine industry and an important part of the rural economy. It surrounds Middleburg, a major tourist attraction, and includes many historic structures and sites including important Civil War sites of cultural importance and tourist interest. It covers a substantial portion of the Mosby Heritage Area and the Beaverdam Historic Roadways District as well as several agricultural districts that already have established 50-acre minimum lot sizes. Limiting residential growth in this area will reduce the need for additional road capacity and support these programs. There is also strong citizen support for keeping Route 50, which bisects the area, a two-lane road that is the subject of a "traffic calming" initiative from Aldie in Loudoun County to Paris in Fauquier County. As such, the Plan calls for this area to develop at a base density of 40 acres per lot, with development options to spin-off residential lots at the equivalent of one dwelling unit per 20 acres or clustered residential lots at the equivalent of one dwelling per 15 acres.

2. The Remainder of the Rural Policy Area (defined generally as north to and west of the Potomac River and west of the Transition Policy Area).

   The existing land use pattern in this area is mixed, with a large number of smaller lots interspersed with large parcels still in agricultural use. Many of the new rural economy uses in the area require land parcels ranging from 10 to 50 acres in size. Therefore, a balanced approach that provides for the further development of clustered rural residential neighborhoods that provide a variety of lot sizes while preserving large parcels for future rural economy enterprises is appropriate. Rural character will be preserved through the implementation of the Green Infrastructure policies. Within this area, environmental overlay districts contained in the Zoning Ordinance will provide special protection for these critical environmental features. As such, the Plan calls for this area to develop at a base density of 20 acres per lot, with development options to cluster or spin-off residential lots at the equivalent of one dwelling unit per 5 acres.

Green Infrastructure

The Rural Policy Area is distinguished by exceptional elements of the Green Infrastructure that not only add beauty to daily life, ~~and~~ document the County's past, and contribute to improved water quality and ecosystem health; but are also an essential component of the tourism industry and the rural economy. Major components of the Green Infrastructure that require preservation include:

- The slopes and ridges of the Blue Ridge, Short Hill, and Catoctin mountains.
- Two state-designated scenic rivers, Goose Creek (all) and Catoctin Creek (from Waterford to the

[1] Analyses of Value Retention of Rural Area Development Options (Loudoun County), Robert Charles Lesser & Company, August 2000.

Potomac), and their tributaries which form a complex network of waterways;

- The lush soils of Loudoun Valley located between the mountain ranges;
- The limestone conglomerate area north of Leesburg and east of the Catoctin Ridge a fragile environment with unusual rock outcrops and topography;
- A network of 330 miles of unpaved, often historic, rural roads with stone fences, old growth canopy trees, and adjoining historic structures and spectacular views of the countryside;
- The state-designated Scenic Byways (various segments of Route 15 and Routes 734, 731, 728, 722, 719, 704, 690, 681, 673, 665, and 662) that have linked rural communities and historic places for generations;
- Historic structures including 18th century structures made of stone or log and stately, 19th-century manor houses, such as Oak Hill, Rockland, and Chestnut Hill.
- Smaller tracts and less imposing homes reflecting the influences of Quakers and Germans who settled farming communities west of the Catoctin Ridge.

The Rural Policy Area also has special districts that protect components of the Green Infrastructure. Twenty-one of the County's 23 Agricultural and Forestal Districts are in the policy area and encompass more than 60,000 acres. These voluntary districts protect agricultural and other land-based uses from the intrusion of suburban services and infrastructure and secure land for agricultural production for a voluntary fixed time period.

There are six County Historic Districts (Aldie, Bluemont, Goose Creek, Oatlands, Taylorstown and Waterford) that contain vast heritage and architectural resources. The Village of Waterford, Oatlands Plantation, Balls Bluff, Dodona Manor and Oak Hill are designated National Historic Landmarks. The Catoctin Rural Historic District, located between the Catoctin Ridge and the Potomac River, is a State Historic District. The entire historical and archeological inventory in the County includes 1,100 historic structures and more than 300 archeological sites. These heritage and natural resource elements of the Green Infrastructure are an integral part of the County's way of life that must be preserved for future generations as they have been for the past 240 years.

There are many other important features of the rural landscape that help define the rural, working landscape and help protect water quality, air quality, and wildlife habitat and are critical for the health of the rural economy and the County. They include: hedgerows, meadows, farm fields, forests and tree cover, wild and domestic animals, river and stream corridor resources (including rivers and streams, lakes and ponds, floodplains, wetlands, and riparian areas) ~~bodies of water~~, topography, slopes and ridge-lines, stream valleys ~~and wetlands~~, road enclosures (including embankments, tree canopy and structures), roads (paved and unpaved), cemeteries, agricultural structures, historic bridges, fence lines, historic rights-of-way, driveways, field demarcations, property entrances, community spaces (including parks and greens), hamlets and villages, scenic vistas and the rural experience.

Green Infrastructure Policies

1. The County will develop and implement rural subdivision design regulations that address the location of houses on the landscape, the use of cul-de-sacs, the retention of open space in contiguous parcels suitable for economic production; and the protection of green infrastructure features such as the best agricultural soils, stream corridors, wetlands, steep slopes, major ponds, important tree stands, historic structures and

stone walls, and major rock outcrops and geological features.

2. Land development in the Rural Policy Area will retain rural economic opportunities and, preserve farms, forests, river and stream corridor resources, open space, and the rural character of the landscape through conservation subdivision design, clustering, and the preservation of large lots at low density.

3. The County will conduct a visual landscape analysis to record and map the scenic aspects of road corridors and will prepare and implement protection measures for rural character features (such as designation of historic roadway districts).

4. The County will identify those properties that are not conducive to development due to sensitive environmental, cultural, and historical characteristics, and promote their purchase through various programs (such as the County's PDR program, through land trusts, etc.).

5. The County will promote the preservation and reclamation of farm buildings and structures to maintain the agricultural infrastructure for future rural economy uses and to retain them as important contributing elements to the visual integrity of the County. The County will use incentives, such as Virginia tax credits and develop new incentives, such as a local tax abatement program.

6. The County will encourage owners of 20 acres or more to avail themselves of the open space category of the Use Value Assessment Legislation by entering into voluntary contracts with the County requiring preservation of open space, particularly in sensitive environmental areas such as river and stream corridors, forested areas, areas adjacent to Scenic Byways and primary roads in rural areas, and other areas designated as part of the County's Green Infrastructure.

Water and Wastewater

A. Groundwater

Groundwater is a precious resource that is highly susceptible to fluctuation in quantity and quality. The variation is influenced by recharge rates, withdrawals from the water table, and contamination. Groundwater is recharged by surface water filtering through soils and fractures, joints, and pores in rock. Recharge and its rate are affected by the volume and duration of precipitation; the permeability of the soils and rock; topography, and the degree of fracture-to-fracture interconnection. Preliminary findings of the County's Groundwater Advisory Committee state that there may be a negative effect of additional withdrawal on the quantity of groundwater available to support new development. Although it is not now known with certainty that additional wells will lower the overall water table or affect regional groundwater quantities, local supplies can be affected by draws because of the cone of depression created by pumping a well.

Individual wells drilled to the groundwater table are the most prevalent method of providing potable water to rural residents. About 12,000 individual wells serve homes in the County, most of them in the Rural Policy Area. About 234 public-use wells serve towns, schools, private subdivisions, restaurants, gas stations, and other facilities. About 98 irrigation wells and 13 industrial wells are employed for uses such as golf courses or concrete plants. Countywide, there are about 13,000 on-site, individual wastewater systems that include a septic tank and drainfield. The proliferation of individual wells and on-site waste disposal systems may pose a serious groundwater and surface water contamination risk for people and aquatic life. The County can reduce the risk by encouraging a development pattern that is served by communal facilities, rather than by individual wells.

The quality of groundwater, however, may well be exposed to significant contamination risk as increasing numbers of drainfields associated with exurban residential development are installed in the Rural Policy Area.

Groundwater contamination can originate on the ground's surface, in the unsaturated ground above the water table, and in the saturated ground below the water table. Because groundwater moves so slowly, once it is contaminated, it may take years for the contamination to be mitigated. A major cause of groundwater contamination is effluent or outflow from on-site sewage disposal systems (septic tanks and drainfields). When these systems are improperly sited, designed, constructed, or maintained, they can contaminate the groundwater with bacteria, nitrates, viruses, detergents, chemicals, and chlorides. Although individual failed systems make an insignificant contribution to contamination, a multitude of these systems makes them a serious contamination threat to the quality of groundwater in the Rural Policy Area.

Communal water systems that are based on one or more communal wells and provide water to multiple homes in a compact geographic area have many distinct advantages over individual private wells. Communal water systems are required to be designed to state and local standards, and will be owned and operated by the LCSA, which has the expertise and resources to operate and maintain the systems to a high level. Fewer wells and proper location of wells with respect to septic drainfields or other wastewater discharge locations reduces the potential for groundwater contamination.

The long-term quality and quantity of groundwater is critical to the health and welfare of residents of the Rural Policy Area. In order to protect the quality and quantity of groundwater, the County can institute a wellhead protection program, a groundwater monitoring program, reduce groundwater use by decreasing the number of groundwater withdrawals through water conservation and reduction in the number of wells, reduce the number of wells to reduce potential contamination opportunities, use communal and/or central water systems when possible to avoid drilling multiple individual wells in close proximity to one another, require comprehensive hydrogeologic studies of entire properties proposed for development prior to approval, and adjust land use policies based on the potential effects of surficial activities on groundwater quality.

Water policies are contained in Chapter Two of this Plan and Groundwater Policies are contained in Chapter Five.

B. Wastewater

As rural dwelling units proliferate, groundwater and surface water contamination from failed drainfields becomes a growing threat. Septic systems pollute groundwater and surface water either by not effectively removing contaminants, such as bacteria and nutrients, from wastewater or by failing. Even properly maintained systems have a useful life of no more than 25 to 40 years. When a system fails, a replacement must be installed in a second drainfield on the same property. The County now requires owners of all newly installed systems to have on their building sites reserved drainfields to fully accommodate replacement systems.

Posing less of a threat to groundwater quality are alternative, on-site individual disposal systems. They more effectively pre-treat wastewater, releasing higher-qualify effluent. However, there are more complicated operational and maintenance issues associated with these systems. They must receive regular inspection, service, and oversight by trained professionals.

Conventional communal wastewater systems for multiple users are available but generally require a minimum of 50 taps in order to be economically and operationally efficient. Costs associated with communal systems have been a deterrent to clustered residential development. Current 2001 zoning regulations allow clustered development on individual septic and drainfield systems. However, lot sizes in such developments have been enlarged and drainfields placed off-site, defeating the environmental and open-space efficiencies of clustering. Recently, alternative communal systems have become available to economically serve smaller clusters of units. The Loudoun County Sanitation Authority (LCSA) oversees the operation of communal systems in the

County.

To protect the groundwater and surface water that supplies drinking water for residents and businesses in the Rural Policy Area and contributes to ecosystem health, the County will limit the number of individual wells and wastewater disposal systems by decreasing the density in the Rural Policy Area. This will have a direct, positive impact by reducing the number of potential septic tanks and intrusions in the water table. The County will encourage the development of combination and alternative systems where feasible and communal systems both water and wastewater to support clustered residential development. The County will rely on the LCSA to identify or contract for the professional expertise required to manage alternative and communal systems installed in the Rural Policy Area. The County will require routine maintenance of individual wastewater disposal systems.

Wastewater policies are contained in Chapter Two of this Plan.

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Chapter 8
Transition Policy Area

Countryside Villages will be permitted on central utilities in the Lower Foley subarea and Rural Villages will be permitted on central utilities in the Lower Bull Run, Lower Sycolin and Middle Goose subareas.

The densities and open space requirements associated with Villages and Residential Clusters are directly related to specific subareas. The desired density and development pattern for each subarea is provided below.

1. Lower Sycolin and Middle Goose Subareas

The County envisions that the Lower Sycolin and Middle Goose subareas in the northern portion of the Transition Policy Area will have a base density of one dwelling unit per ten acres in a clustered development pattern. Clusters will be smaller developments supporting between 5 to 25 units, predominantly single-family residential units in individual hamlets. Rezonings to Rural Villages with incorporation of the design criteria for Rural Villages contained in the 1993 Zoning Ordinance at one dwelling unit per three acres will be permitted when 70 percent of the site is maintained as open space. The County envisions that these two subareas will have a more rural character, with lower densities and higher open space requirements than that in the other subareas, to facilitate a transition to the Rural Policy Area. Open spaces will be the dominant visual feature of the landscape.

All new developments within the Landfill Water Service Area District in the Lower Sycolin subarea will be required to be served by central water lines. Central and communal water and wastewater systems are preferred over individual utility systems in all other areas of the Lower Sycolin and Middle Goose subareas. Wastewater systems proposing subsurface or surface discharge will be discouraged in these subareas, given their proximity to the Goose Creek and Beaverdam reservoirs. Alternate sewage disposal systems that ensure a high level of treatment and offer efficiencies in cost, operation and maintenance will be encouraged.

Luck Stone Quarry, located within the Lower Sycolin subarea, will continue to be protected from encroaching residential development. Also, the creation of a buffer and voluntary open space area that is consistent with the River and Stream Corridor ~~RSCOD~~ policies is a priority in this subarea.

Community Design Policies

1. Residential uses within the Transition Policy Area will develop as Rural Villages, Countryside Villages, and Residential Clusters, with base densities and rezoning options related to the conditions of the specific subareas.

2. The County will establish a density of one dwelling unit per ten acres with development clustered on lots up to three acres in the Lower Sycolin and Middle Goose subareas. The County will provide the option to rezone to a Rural Village with a density of one dwelling unit per three acres in accordance with the 1993 Zoning Ordinance. Development will be clustered to maintain a minimum of 70 percent of a site as open space.

3. The County will retain the densities of one dwelling unit per three acres and one dwelling unit per acre as established in the current zoning patterns in the Upper Broad Run, Upper Foley, and Lower Foley and Lower Bull Run subareas.

4. The County will revise the existing regulations in the Zoning Ordinance to require clustered development patterns with a minimum of 50 percent of the site maintained as open space and no minimum lot size to promote housing type diversity.

5. In the Lower Foley subarea, densities up to two dwelling units per acre can be developed in Countryside Villages, with a minimum of 50 percent of the site maintained as open space. With density transfers from the Lower Bull Run subarea, up to three dwelling units per acre may be possible.

6. The Lower Bull Run subarea is planned for one dwelling unit per three acres. The County will provide the option to rezone to a Rural Village with a density of one dwelling unit per three acres in accordance with the 1993 Zoning Ordinance. Development will be clustered to maintain a minimum of 70 percent of a site as open space. Density transfer to the Lower Foley subarea is encouraged in accordance with the Density Transfer Guidelines of this Plan. The County will consider rezonings at up to one dwelling unit per acre (excluding affordable dwelling units) for properties in the northern portion of the Lower Bull Run. The northern portion of the Lower Bull Run sub-area is limited to properties lying outside of the Quarry Notification Overlay District as mapped prior to April 2004.

7. The design guidelines for the Lower Sycolin, Middle Goose and Lower Bull Run subareas will incorporate the design criteria for Rural Villages in the existing 1993 Zoning Ordinance, to foster developments in the character of Rural Villages.

8. Residential Cluster development in all Transition Policy Area subareas close to the Rural Policy Area will develop as clusters of 5 to 25 units with predominantly single-family detached residential units. The Residential Cluster is intended to draw from the traditional development pattern of Rural Hamlets and facilitate a transition in the scale of residential cluster developments from the Suburban to Rural Policy Areas.

9. Residential Clusters and Villages will be developed with specific design criteria that help to form open space (which may include active and passive recreation) surrounding the residential development. Refer to the Design Guidelines contained in Chapter Eleven.

10. Residential Cluster developments allow landowners to group lots in a traditional rural community pattern while preserving the majority of the land base in open space. A Residential Cluster is the grouping of building units on small lots with the largest part of the site remaining in open land. There is no minimum lot size for the clustered lots. The cluster is both visual and spatial with the dwellings scaled and sited to maintain coherent relationships to each other and the surrounding landscape. The residual open land accounts for the overall lower density of the site.

11. The County may consider a cluster to include the siting of houses in a group using conservation design and not just the siting of lots on a parcel.

12. In locating the open space required in the conservation design of a Residential Cluster, the County will consider the contiguity of the open space area to other designated open space and unique site features and Green Infrastructure implementation.

13. Open space provided within developments will be located to accomplish the following:

    a. Create and supplement the 300-foot buffer and 200-foot transitional area proposed along the Bull Run in the Upper Foley, Lower Foley and Lower Bull Run subareas.~~,~~ Any uses within this area must

be consistent with the River and Stream Corridor ~~RSCOD~~ policies.

b. Create and supplement the 300-foot buffer and 1000-foot voluntary open space area proposed along the Goose Creek and the Goose Creek Reservoir and the Beaverdam Reservoir in the Lower Sycolin and Middle Goose subareas, consistent with the River and Stream Corridor ~~RSCOD~~ policies.

c. Create a contiguous network of green spaces to supplement the Countywide Green Infrastructure.

14. Adding to the creation of the greenbelts and buffer will be credited to the satisfaction of open space requirements.

15. The County will encourage the development of non-residential uses in the Transition Policy Area that provide a transition from suburban to rural. Such uses may include but are not limited to equestrian centers, golf courses, retail nurseries, boarding schools and kennels, large institutions provided they meet specific criteria that address the nature, scale and intensity of the use, market area and design characteristics.

16. Non-residential uses will serve to define the Transition Policy Area as a unique planning area. The County will allow for a range of uses that are compatible with desired development patterns and the rural landscape and are at intensities not permissible within the Rural Policy Area.

17. Small-scale commercial uses permitted through the home occupation and small business provisions of the Zoning Ordinance are appropriate in the Transition Policy Area.

18. Villages exceeding 100 dwelling units should provide a community core that will serve as the focal point within the development.

19. The community core can vary in scale, design and use depending on the scale of the community it serves. The total area dedicated to the non-residential uses shall not exceed three percent of the area of the proposed development. The following location and design criteria apply.

a. A Village Core is intended to create a sense of place and identity for the community.

b. A Village Core is intended to be a compact grouping of residential, business, commercial retail and service and civic uses providing convenience goods and services to residents in adjoining neighborhoods.

20. Approval of a request to rezone property to permit Villages shall be contingent on the provision of appropriate civic uses and services, compatibility with existing neighborhoods, and compliance of the proposal with the community design goals and policies of the County.

21. The County will require a variety of housing types and lot sizes in the Villages, such as single-family, multi-family and townhouse units.

22. Civic and institutional uses will constitute the predominant component of the non-residential uses within the Villages. Office and commercial retail uses will be permitted at scales necessary to foster a self-sustaining community. Cores will not develop as destination retail centers.

23. Civic uses that are appropriate within Villages include houses of worship, community centers, elementary schools, government human services offices and facilities such as senior cafés, branch libraries and similar uses. In addition, the following location criteria apply.

a. Civic uses should be located at prominent locations within the core such as the end of a street or street intersection.

b. Parking, signs, lighting and loading areas must be located and designed to have minimal undesirable impact on surrounding areas and ensure that the standards and environmental impacts on surrounding areas conform to County requirements.

c. The scale of civic uses must be compatible with the residential and pedestrian nature of the surrounding village. Large-scale civic or institutional uses requiring more than 15 buildable acres, either individually or in a multipurpose facility, should be located on the periphery of an individual neighborhood or in core areas on roads that can accommodate the anticipated traffic volume.

24. Open space such as natural areas, tot lots, athletic fields, parks and greens should generally be dispersed in Villages so that they are conveniently located to most people. In addition, the following location criteria apply.

    a. Athletic fields should be located, where practical, along collector roads and should be buffered from adjoining residences, although trails and sidewalks should provide a connection with the neighborhood.

    b. Greens and other maintained passive parks should serve ~~both a~~ recreational, ~~and a~~ design, and environmental functions. They should be located in high-visibility areas or in conjunction with civic uses such as schools, churches or community buildings and neighborhood commercial centers where the green can serve as either a "mall" for the center or as a buffer for adjoining homes.

25. Equestrian facilities and trail networks will be promoted and enhanced within the Transition Policy Area.

26. The County will protect the Bull Run Quarry in the Lower Bull Run subarea and the Luck Stone Quarry in the Lower Sycolin subarea from incompatible uses by ensuring that encroaching new development does not hinder the quarry operation.

27. The County will develop and implement an area management plan to provide detailed design and land use guidance for planned development in the Transition Policy Area. The area management plan process will involve the area's citizens and business owners in the development of plan policy.

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Chapter 9
The Towns

Leesburg Joint Land Management Area Policies

1. The Town of Leesburg will continue to be the principal location of County Government offices and to serve as the County seat.

2. Development within the Joint Land Management Area will comply with the *Leesburg Area Management Plan*, the *Toll Road Plan***,** the Annexation Area Development Policies as may be amended, and the *Leesburg Town Plan.*

3. Power generation plants are not compatible with existing residential areas within or near the Town JLMA, and therefore, are not allowed in the Leesburg JLMA.

4. The *Revised General Plan* designates a greenbelt around the Town and within the JLMA consisting of the following areas:

   a. Land within the 100-year floodplain of the Sycolin and Goose creeks, provided that the County's River and Stream Corridor ~~Overlay District (RSCOD)~~ policies also apply;

   b. To the west and north of the Town, where the corporate limits represent the JLMA, the greenbelt extends into the Rural Policy Area for 2,600 feet; and;

   c. Adjacent to the JLMA along Route 15, north of Leesburg, the greenbelt extends 2,600 feet into the Rural Policy Area.

5. Development to the west of Route 621 will preserve and enhance the rural character of the viewsheds along Route 15 and be compatible with the Town's Historic Corridor Overlay District.

6. The Town and County will work cooperatively to create a conservation area along the Potomac River in the northeast section of the JLMA as a component of the Green Infrastructure.

7. The County will return the northern triangle and the southwestern section of the JLMA (the area west of the Toll Road and south of the Town Boundary) to the Rural Policy Area, with the exception of the small area on the west side of the Town located behind the Woodlea subdivision.

8. The southeastern portion of the JLMA will be remapped to zoning classifications that are compatible with the Land Use Map and that are compatible with the Leesburg Executive Airport.

9. The County will coordinate with the Town of Leesburg and VDOT on the feasibility of planning and building Edwards Ferry Road as a two-lane facility with a bike path. The County will work with the Town and VDOT to designate the road as a scenic by-way.

10. The County supports the future study of extending the Dulles Corridor Bus Rapid Transit (BRT)/Rail project to Leesburg.

11. The County will, in coordination with the Town of Leesburg, study the proposed design and function of Crosstrail Boulevard from Route 621 to Route 7.

12. The County encourages a variety of housing types and innovative designs to be developed in mixed-use communities to assist fulfilling unmet housing needs.

13. The County will identify options for unmet housing needs in the Leesburg area not covered by the ADU zoning ordinance and work toward an implementation plan.

14. Developers of residential and mixed-use projects are encouraged to include proffers to fulfill unmet housing needs in their development proposals.

15. The County will explore options for the creation of programs, tools, and incentives both publicly and privately developed that will fulfill unmet housing needs.

16. The County will examine the authority to establish and use the benefits of Housing Trust Funds to help fulfill unmet housing needs.

17. The County will encourage public and private initiatives to provide increased housing opportunities for residents and the local workforce. Both programmatic and design approaches will be encouraged in all projects to fulfill unmet housing needs.

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Chapter 11
Implementation

B. Open Space

In this Plan, the County has outlined a number of methods for acquiring open space. In the past, the Open Space Preservation Program was linked to increases in density. In the *Revised General Plan*, sufficient open space is recognized as a key component to all development regardless of density. However, the Open Space Preservation Program remains in place for the highest suburban density levels – from 3.5 dwelling units per acre to 4.0 dwelling units per acre. The County's program for obtaining open space comprises a "toolbox" approach with a number of mechanisms to ensure the adequate provision of active, passive, and natural open space in the County.

1. Open space within a development will be obtained through conservation design and clustering as detailed in this Plan and subsequent regulations. Conservation design provides for the on-site transfer of density away from environmentally sensitive or culturally significant areas (i.e., components of the Ggreen Iinfrastructure including river and stream corridor resources ~~RSCOD~~).

2. Participation in the Open Space Banking Program permits up to 50 percent of required open space on an individual site to be provided off-site.

3. To achieve higher densities in residential communities, the Board of Supervisors anticipates evidence of participation in the Open Space Preservation Program according to the following guidelines:

    a. Residential Neighborhoods: Densities ranging from 1.0 dwelling units per acre for the Suburban Policy Area up to 4.0 dwelling units per acre may be considered by the County in accordance with the capital facilities guidelines of this Plan and may be considered by the County for voluntary participation in the Open Space Preservation Program. Residential densities above 3.5 and up to and including 4.0 dwellings per acre may be considered by the County in return for voluntary participation in the open space preservation program according to the guidelines presented below and the Density Transfer Guidelines.

    b. To achieve higher densities in High-Density Residential areas, the Board of Supervisors anticipates evidence of participation in the Open Space Preservation Program. Five percent of all residential units associated with densities above 4.0 dwellings per acre should result from the acquisition of an equivalent number of open space easements according to the guidelines presented below and the Density Transfer Guidelines. Offsite open space can include priority open space areas, greenbelts, and components of the green infrastructure. A land contribution on an acre-by-acre basis is desired. If the land offered does not suit the County in terms of quality or location, the County may consider cash in lieu of the land for the purchase of open space. The County will pursue the purchase of open space to provide additional active recreation, to create key trail connections, and to protect environmentally sensitive areas. The County will create a database of infill or other sites targeted for possible purchase. A per unit cash donation may be made to the County for the purchase of open space, according to policies of this Plan. Cash donations for open space will be spent in the density transfer area from which the proffer contribution is obtained.

4. Although the County does not have the authority from the state to conduct a formal Transfer of Development Rights program, the County will seek enabling legislation to do so. Until a formal program is in place, the County will guide development to desired areas through conservation design and the purchase of open space easements. The purchase of easements for additional density has been referred to as voluntary transfer of density, and not to be mistaken with a formal TDR program.

5. The County's Purchase of Development Rights (PDR) program compensates property owners who voluntarily agree to sell the right to develop their land. The PDR program protects agricultural, natural, historic, and scenic resources and seeks to retain open space in the Suburban Policy Area.

6. Cash contributions may be provided for the enhancement and/or improvement of historic features within the policy area to fulfill the open space guidelines if the County agrees to or requests the exchange.

5. Transit Nodes

Two Transit Nodes, eventually served by rail transit, will be located along the Dulles Greenway. These two Transit Nodes will serve different functions: the Transit-Oriented Development (TOD) will serve as a compact mixed-use Transit Node, while the Transit-Related Employment Center (TREC) will serve as a compact, pedestrian-oriented area for employment or Special Activity uses. Each Transit Node will encompass an area no greater than a 1/2-mile from Transit Node edge to the transit stop to ensure compact development, with reliance on transit and pedestrian circulation. Certain areas of the Transit Nodes should be reserved as car-free districts.

The TODs will be composed of a core and an outer core. Transit stops will be located at the center of the core. The highest land use intensities will be located close to the transit stop at the core of the TOD. Land uses diminish in intensity as they increase in distance from the transit stop. A Transit-Supportive area will surround the TOD, providing for a continuation of the pedestrian-oriented pattern, with short blocks arranged in a rectilinear pattern to facilitate pedestrian access to feeder bus stops, and efficient access for the feeder buses to the Transit Node core. Higher density development in the Transit-Supportive area should be clustered in pockets along transit corridors to support feeder bus travel.

The TREC will encompass an area no greater than a 1/2-mile arc north of the transit station. Because the TREC is encumbered with river and stream corridor resources ~~RSCOD~~ and access to the site is limited by the Dulles North Transit Center, it is crucial that pedestrian networks be clear, safe, and logical. Development within the TREC will be compact and provide for efficient pedestrian and transit connections to the transit station. The TREC may develop as a special activity use, such as a sports stadium.

The development intensity of the Transit Nodes will be phased when road and transit capacity can support it. The County will consider density and intensity increases when there is adequate transportation capability to handle the associated traffic increases (roads, bus, and rail). Each density and intensity phase can be achieved when the next level of transportation capacity is planned, programmed, designed, and fully funded for construction either by public subsidy, a joint public/private venture, a consortium of property owners, or the private sector, in order to ensure adequate transportation capacity.

The *Toll Road Plan* provides additional design guidelines.

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Glossary

Chesapeake Bay Preservation Area (CBPA): A locally-determined land area that if improperly developed may result in substantial damage to the water quality of the Chesapeake Bay and its tributaries. The ecological and geographic extent of the area is determined after consideration of all factors relevant to the protection of water quality from significant degradation as a result of the use and development of land. A CBPA includes two components: a Resource Protection Area (RPA) and a Resource Management Area (RMA).

Connected Wetlands: Wetlands connected by surface flow and contiguous to water bodies with perennial flow (Chesapeake Bay Preservation Act).

Indigenous Vegetation: Also referred to as native vegetation. Existing plant communities or species that occur naturally to a specified region or area, and that are descendants of plants that existed prior to the land being developed or cultivated.

Invasive Alien Plants: Also referred to as exotic, non-native, or non-indigenous plants as determined by the Virginia Department of Conservation and Recreation. Species that have been intentionally or unintentionally introduced by human activity into a region in which they did not evolve, escape cultivation, become agricultural pests, infest landscape areas, displace native plant species, reduce wildlife habitat, and alter ecosystem processes. Left unchecked, these plants may severely alter a site's natural, economic, aesthetic, or other cultural values.

Ordinary High Water Mark: The line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Resource Management Area (RMA): The component of the CBPA comprised of lands that, if improperly used or developed, have a potential for causing significant water quality degradation or for diminishing the functional value of the RPA. The RMA includes all areas of the County not designated as an RPA.

Resource Protection Area (RPA): Lands adjacent to water bodies with perennial flow that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts, which may result in significant degradation of the quality of state waters. In their natural condition, these lands provide for the removal, reduction, or assimilation of sediments, nutrients, and potentially harmful or toxic substances from runoff entering the Chesapeake Bay and its tributaries, and minimize the adverse effects of human activities on state waters and aquatic life. The RPA shall include:

- Wetlands connected by surface flow and contiguous to water bodies with perennial flow; and
- A 100-foot buffer area located adjacent to and landward of the wetlands and along both sides of any water body with perennial flow, measured horizontally from the Ordinary High Water Mark.

Riparian Areas: Lands adjacent to streams, rivers, and other bodies of water that serve as a transition between aquatic and upland environments. A forested riparian buffer helps maintain the integrity of stream channels and shorelines; reduces the impact of pollution by trapping, filtering, and converting sediments, nutrients, and other chemicals; and supplies food, cover, and thermal protection to aquatic life and wildlife.

~~***Riparian:*** An area of land contiguous to a stream, river, lake or wetland that contains vegetation that, due to the presence of water, is distinctly different from the vegetation of adjacent areas.~~

~~***Riparian Forest:*** Also called a riparian forest buffer when part of a larger stream buffer. A strip of land along a river or stream where forest and vegetation help to protect water quality, filter pollutants, regulate water temperature, enhance aquatic and wildlife habitats, and provide aesthetic value to the river or stream.~~

~~***Stream Buffer:*** Defined as part of the River and Stream Corridor Overlay District as a minimum area of land directly adjacent to and on either side of a river or stream, designated as no-build where disturbance is not allowed. The primary purpose of the stream buffer is to preserve or enhance natural vegetation in order to provide adequate filtration of pollutants and improve water quality.~~

~~***Stream Corridors:*** Also referred to as River and Stream Corridors. The area of a watershed defined by the River and Stream Corridor Overlay District and including rivers and streams draining 100 acres or more; all 100-year floodplains and adjacent steep slope areas; wetlands, riparian forests, and historic and cultural resources and archaeological sites that occur therein; along with a minimum stream buffer and a management buffer that surrounds the floodplain and adjacent steep slope areas.~~

Streams: A water body that flows under normal conditions. Streams may be classified as perennial or intermittent.

- ***Perennial Stream:*** a flowing system continuously recharged by groundwater or surface runoff regardless of weather conditions. It exhibits well-defined geomorphological characteristics and in the absence of pollution, thermal modifications, or other man-made disturbances has the ability to support aquatic life. During drought conditions the flow may be impaired.

- ***Intermittent Stream:*** A flowing system under normal weather conditions with surface and groundwater contributions. During the dry season and throughout minor drought periods, these streams will not exhibit flow. Geomorphological characteristics are not well-defined and are often inconspicuous. In the absence of external limiting factors, biology is scarce and adapted to the wet and dry conditions of fluctuating water levels.

Watershed: A land ~~broad~~ area defined by natural hydrology that collects and discharges water into surface water bodies, ~~or~~ that recharges groundwater, or both. A watershed generally includes rivers, streams, lakes, wetlands, groundwater, and the surrounding landscape.

Wetlands: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. ~~Vegetated areas where plants are rooted in water or water-saturated soil, or that regularly tolerate flooding for extensive time periods. Includes but is not limited to swamps and marshes. Many~~ W~~w~~etlands may ~~do~~ not appear wet at all times.